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January 21, 2000

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IDHW-DEQ
Coeur d'Alene Field Office

Anchorage

Mr. Gregory A. Rapp
Construction Services Manager
Potlatch Corporation
1100 Railroad Avenue
P.O. Box 386
St. Maries, Idaho 83861

Boston

Re: Fourth Quarter 1999 Performance Report
Avery Landing Recovery System
J-2296-07

Chicago

Dear Mr. Rapp:

Denver

Hart Crowser is pleased to present the Fourth Quarter 1999 Performance Report for the Avery Landing free product recovery system. This letter report presents the fourth quarter groundwater elevations, product thickness measurements, and recovered free product volume.

Fairbanks

GROUNDWATER AND PRODUCT QUARTERLY MONITORING

Jersey City

Four extraction wells (EW-1 through EW-4), two piezometers (P1 and P2), and three monitoring wells (HC-4, MW-5, and MW-11) were monitored on December 2, 1999. Well and piezometer locations are shown on Figure 1. Monitoring well HC-1 was below standing water and was not measured. At each monitoring location, depth to product and depth to groundwater measurements were performed using a Flexidip, a free product measuring device. River elevations, based on actual data from EW-2 and the average slope of the river, are noted in Table 1. The Third Quarter 1999 Performance Report provided an explanation for the use of calculated river elevations when conditions do not favor direct measurement.

Juneau

Long Beach

EXTRACTION WELL OPERATION

Though the extraction system was running and maintaining a trough for free product to capture, it was not maintaining absolute capture. During normal operation the bottom of the trough created by the pumping system is lower than the river elevation. During periods of low river flow it is normal for the river elevation to be less than the trough bottom. This

Portland

Seattle

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monitoring event is the first time, when the system was operating properly, that we have seen the river level lower than the trough during the "wet" season. We feel this was caused by the rapid fluctuating river level during the last monitoring event. The local Potlatch representative, Don Green, indicated the river had been fluctuating 4 to 5 feet in the month of November. This will be documented by the USGS data when they are released in 6 months. When the river level decreases quickly the groundwater level lags behind. The pumping system is not able to depress the groundwater level as fast as the river fluctuates. The effect of this is that the oil that was already past the treatment trench has a tendency to flow toward the river instead of the trench. This oil is then captured in the oil booms along the river bank. Possible system modifications to minimize the dependency of system on the oil booms will be discussed in the yearly report.

FREE PRODUCT RECOVERY

The treatment system recovered approximately 5 gallons of free phase hydrocarbons since the September 1999 monitoring event and has collected roughly 25 gallons of free phase hydrocarbons during the 1999 operating period. The volume of product collected during the fourth quarter is a conservative estimate based on the thickness of the product layer in the free product storage tank. Recent removal of water from the storage tank decreased the liquid level within the tank and resulted in free product collecting on the tank walls. The volume of free product on the tank walls is expected to be approximately 5 gallons.

PROJECT SCHEDULE

This performance evaluation concludes monitoring activities at the site for the 1999 project year. The 1999 Annual Summary Report will be submitted by February 5, 2000.

LIMITATIONS

Work for this project was performed, and this letter report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar location, at the time the work was performed. It is intended for the exclusive use of the Potlatch Corporation for specific application to the referenced property.




Potlatch Corporation
January 21, 2000

J-2296-07
Page 3


If additional information or clarification is required, please call Terry Montoya at
(206) 324-9530.

Sincerely,

HART CROWSER, INC.



TERRY MONTOYA
Project Engineer



MATT SCHULTZ, P.E.
Senior Associate Engineer

F:\DATA\JOBS\229607\ptlc4thq99(ltr).doc

Attachments:

Table 1 - Avery Landing Groundwater and River Monitoring Data

Figure 1 - Avery Landing Fourth Quarter Groundwater Flow Direction Map

cc: Kreg Beck, Idaho Department of Environmental Quality

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 1 of 6

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
EW-1	10/27/94	ND	11	0	95.34	84.34
	6/30/95	ND	10.9	0	95.34	84.44
	9/21/95	11.25	11.27	0.02	95.34	84.07
	7/11/96	ND	9.74	0	95.34	85.60
	9/11/96	ND	10.88	0	95.34	84.46
	11/5/96	ND	11.94	0	95.34	83.40
	7/17/97	ND	10.38	0	95.34	84.96
	10/9/97	ND	13.17	0	95.34	82.17
	6/25/98	ND	10.01	0	95.34	85.33
	8/12/98	NM	10.52	0	95.34	84.82
	10/22/98	Sheen	10.86	0	95.34	84.48
	3/18/99			0	95.34	85.57
	6/22/99	ND	11.68	0	95.34	83.66
	9/16/99	ND	10.72	0	95.34	84.62
	12/2/99	ND	9.78	0	95.34	85.56
EW-2	10/27/94	ND	10.37	0	95.24	84.87
	6/30/95	10.57	10.89	0.32	95.24	84.35
	9/21/95	13.9	13.92	0.02	95.24	81.32
	7/11/96	11.03	11.66	0.63	95.24	83.58
	9/11/96	Sheen	14.00	0	95.24	81.24
	11/5/96	Sheen	12.27	0	95.24	82.97
	7/17/97	8.99	9.09	0.1	95.24	86.15
	10/9/97	Sheen	15.44	0	95.24	79.80
	6/25/98	9.19	9.64	0.45	95.24	85.60
	8/12/98	NM	9.99	0	95.24	85.25
	10/22/98	Sheen	10.94	0	95.24	84.30
	3/18/99	10.17	10.27	0.1	95.24	84.97
	6/22/99	11.3	11.31	0.01	95.24	83.93
	9/16/99	15.32	15.35	0.03	95.24	79.89
	12/2/99	9.91	10.1	0.19	95.24	85.14
EW-3	10/27/94	ND	10.05	0	95.78	85.73
	6/30/95	9.35	9.8	0.45	95.78	85.98
	9/21/95	10.92	11.08+	0.16	95.78	84.70
	7/11/96	8.53	8.64	0.11	95.78	87.14
	9/11/96	10.75	11.70	0.95	95.78	84.08
	11/5/96	Sheen	11.8	0	95.78	83.98
	7/17/97	9.13	9.33	0.2	95.78	86.45
	10/9/97	10.9	11.68	0.78	95.78	84.10
	6/25/98	8.78	9.43	0.65	95.78	86.35
	8/12/98	NM	11	0	95.78	84.78
	10/22/98	12.58	13.38	0.8	95.78	82.40
	3/18/99	9.03	9.23	0.2	95.78	86.55
	6/22/99	11.1	11.25	0.15	95.78	84.53
	9/16/99	10.76	11.06	0.3	95.78	84.72
	12/2/99	9.04	9.1	0.06	95.78	86.68

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Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 2 of 6

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
EW-4	10/27/94	ND	8.05	0	94.32	86.27
	6/30/95	7.84	7.85	0.01	94.32	86.47
	9/21/95	8.22	8.24	0.02	94.32	86.08
	7/11/96	Sheen	6.44	0	94.32	87.88
	11/5/96	Sheen	8.08	0	94.32	86.24
	7/17/97	Sheen	5.43	0	94.32	88.89
	10/9/97	Sheen	7.11	0	94.32	87.21
	6/25/98	5.28	5.3	0.02	94.32	89.02
	8/12/98	NM	8.98	0	94.32	85.34
	10/22/98	ND	8.98	0	94.32	85.34
	3/18/99	5.18	5.26	0	94.32	89.06
	6/22/99	Sheen	9	0	94.32	85.32
	9/16/99	8.45	9.27	0.82	94.32	85.05
	12/2/99	7.31	7.36	0.05	94.32	86.96
HC-1	10/27/94	ND	13.25	0	97.50	84.25
	6/30/95	ND	12.00	0	97.50	85.50
	9/21/95	NM	13.42	0	97.50	84.08
	7/11/96	ND	11.92	0	97.50	85.58
	9/11/96	ND	12.90	0	97.50	84.60
	11/5/96	Could not locate due to snow				
	7/17/97	ND	11.27	0	97.50	86.23
	10/9/97	ND	12.87	0	97.50	84.63
	6/25/98	ND	11.85	0	97.50	85.65
	8/12/98	NM	12.97	0	97.50	84.53
	10/22/98	ND	13.1	0	97.50	84.40
	3/18/99	ND	11.7	0	97.50	85.80
	6/22/99	ND	9.28	0	97.50	88.22
	9/16/99	ND	12.98	0	97.50	84.52
	12/2/99	Well Under Standing Water				
HC-4	10/27/94	13.3	15.34	2.04	98.94	83.60
	6/30/95	11.89	15.49	3.6	98.94	83.45
	9/21/95	13.67	NM	NM	98.94	85.27
	7/11/96	11.58	12.93	1.35	98.94	86.01
	9/11/96	13.53	13.93	0.40	98.94	85.01
	11/5/96	11.82	13.62	1.80	98.94	85.32
	7/17/97	11.65	13.25	1.60	98.94	85.69
	10/9/97	12.67	14.92	2.25	98.94	84.02
	6/25/98	11.53	12.49	0.96	98.94	86.45
	8/12/98	NM	13.9	NM	98.94	85.04
	10/22/98	10.3	14.7	4.40	98.94	84.24
	3/18/99	10.5	14.05	4.45	98.94	84.89
	6/22/99	16.9	13.9	4.00	98.94	85.04
	9/16/99	15.89	17.57	1.68	98.94	81.37
	12/2/99	10.84	11.84	1.00	98.94	87.10

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Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 3 of 6

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
HC-5	11/5/96	ND	11.22	0	97.95	86.73
	7/17/97	Monument under standing water				
	10/9/97	Monument under standing water				
	6/25/98	Lost during road construction				
MW-4	9/14/94	ND	12.88	0	99.76	86.88
	6/30/95	ND	10.19	0	99.76	89.57
	9/21/95	ND	11.95	0	99.76	87.81
	7/11/96	Sheen	10.18	0	99.76	89.58
	9/11/96	Sheen	11.33	0	99.76	88.43
	11/5/96	Lost during road construction				
MW-5	10/27/94	ND	10.45	0	97.76	87.31
	6/30/95	ND	9.13	0	97.76	88.63
	9/21/95	ND	10.83	0	97.76	86.93
	7/11/96	ND	8.98	0	97.76	88.78
	9/11/96	ND	10.71	0	97.76	87.05
	11/5/96	ND	10.65	0	97.76	87.11
	7/17/97	ND	8.75	0	97.76	89.01
	10/9/97	ND	10.89	0	97.76	86.87
	6/25/98	ND	8.56	0	97.76	89.20
	8/12/98	NM	10.68	0	97.76	87.08
	10/22/98	ND	13.5	0	97.76	84.26
	3/18/99	ND	8.8	0	97.76	88.96
	6/22/99	ND	6.44	0	97.76	91.32
	9/16/99	ND	10.8	0	97.76	86.96
	12/2/99	ND	9.82	0	97.76	87.94
MW-11	9/14/94	12	NA	NA	98.16	NA
	6/30/95	5.54	7.25	1.71	98.16	90.41
	7/11/96	6.34	10.00	3.66	98.16	88.16
	9/11/96	3.25	7.20	3.95	98.16	90.96
	11/5/96	3.05	7.20	4.15	98.16	90.96
	7/17/97	6.33	9.99	3.66	98.16	88.17
	8/12/98	NM	3.90	NM	98.16	94.26
	10/22/98	6.96	8.00	1.04	98.16	90.16
	9/16/99	Not Measured				
	12/2/99	6.9	7.37	0.47	98.16	90.79

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Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 4 of 6

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
P-1	10/27/94	ND	17.31	0	101.42	84.11
	6/30/95	ND	16.72	0	101.42	84.70
	9/21/95	ND	17.4	0	101.42	84.02
	7/11/96	ND	15.87	0	101.42	85.55
	9/11/96	ND	16.98	0	101.42	84.44
	11/5/96	ND	17.06	0	101.42	84.36
	7/17/97	ND	15.34	0	101.42	86.08
	10/9/97	ND	17.64	0	101.42	83.78
	6/25/98	ND	14.53	0	101.42	86.89
	8/12/98	NM	16.72	0	101.42	84.70
	10/22/98	ND	15.6	0	101.42	85.82
	3/18/99	ND	15.65	0	101.42	85.77
	6/22/99	ND	13	0	101.42	88.42
	9/16/99	ND	16.84	0	101.42	84.58
	12/2/99	ND	15.93	0	101.42	85.49
P-2	10/27/94	ND	15.87	0	100.06	84.19
	6/30/95	ND	15.26	0	100.06	84.80
	9/21/95	ND	16.04	0	100.06	84.02
	7/11/96	ND	14.52	0	100.06	85.54
	9/11/96	ND	15.62	0	100.06	84.44
	11/5/96	ND	15.08	0	100.06	84.98
	7/17/97	ND	13.92	0	100.06	86.14
	10/9/97	ND	16.09	0	100.06	83.97
	6/25/98	ND	15.95	0	100.06	84.11
	8/12/98	NM	15.3	0	100.06	84.76
	10/22/98	NM	16.95	0	100.06	83.11
	3/18/99	NM		0	100.06	86.02 ****
	6/22/99	ND	11.65	0	100.06	88.41
	9/16/99	ND	15.46	0	100.06	84.60
	12/2/99	ND	14.55	0	100.06	85.51
River at EW-1	10/27/94					83.12 *
	6/30/95					84.03 **
	9/21/95					82.24
	7/11/96					83.74 ***
	9/11/96					82.56
	11/5/96					83.16
	7/17/97					82.39
	10/9/97					83.00
	6/25/98					85.22
	8/12/98					85.42
	10/22/98					85.00
	3/18/99					83.93
	6/22/99					83.93
	9/16/99					78.28
	12/2/99					82.97

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Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 5 of 6

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
River at EW-2	10/27/94					84.41
	6/30/95					85.32
	9/21/95					83.53
	7/11/96					85.03
	9/11/96					83.85
	11/5/96					83.59
	7/17/97					85.35
	10/9/97					84.20
	6/25/98					86.42
	8/12/98					86.62
	10/22/98					86.20
	3/18/99					85.13
	6/22/99					85.13
	9/16/99					79.48
	12/2/99					84.17
River at EW-3	10/27/94					85.16 *
	6/30/95					86.07
	9/21/95					84.28
	7/11/96					85.78 ***
	9/11/96					84.60
	11/5/96					84.10
	7/17/97					86.31
	10/9/97					85.16
	6/25/98					85.16
	8/12/98					85.65
	10/22/98					85.23
	3/18/99					86.10
	6/22/99					89.45
	9/16/99					85.29
	12/2/99					85.13

2296-07\pdc1299.xls - Monitoring Results

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 6 of 6

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
River at EW-4	10/27/94					86.49 *
	6/30/95					87.40
	9/21/95					85.61
	7/11/96					87.11 ***
	9/11/96					85.93
	11/5/96					86.44
	7/17/97					87.27
	10/9/97					86.12
	6/25/98					88.34
	8/12/98					88.54
	10/22/98					88.12
	3/18/99					87.05
	6/22/99					90.40
	9/16/99					86.89
	9/16/99					86.09

Notes:

All measurements in feet.

* River elevation was extrapolated from the river surface slope measured in 1995 and the river elevation measured south of EW-2 in 1994.

** River elevation was extrapolated from river surface slope, based on river elevations measured south of EW-2, EW-3, and EW-4 in 1995.

*** River elevation was extrapolated from river surface slope, and the wood dock benchmark.

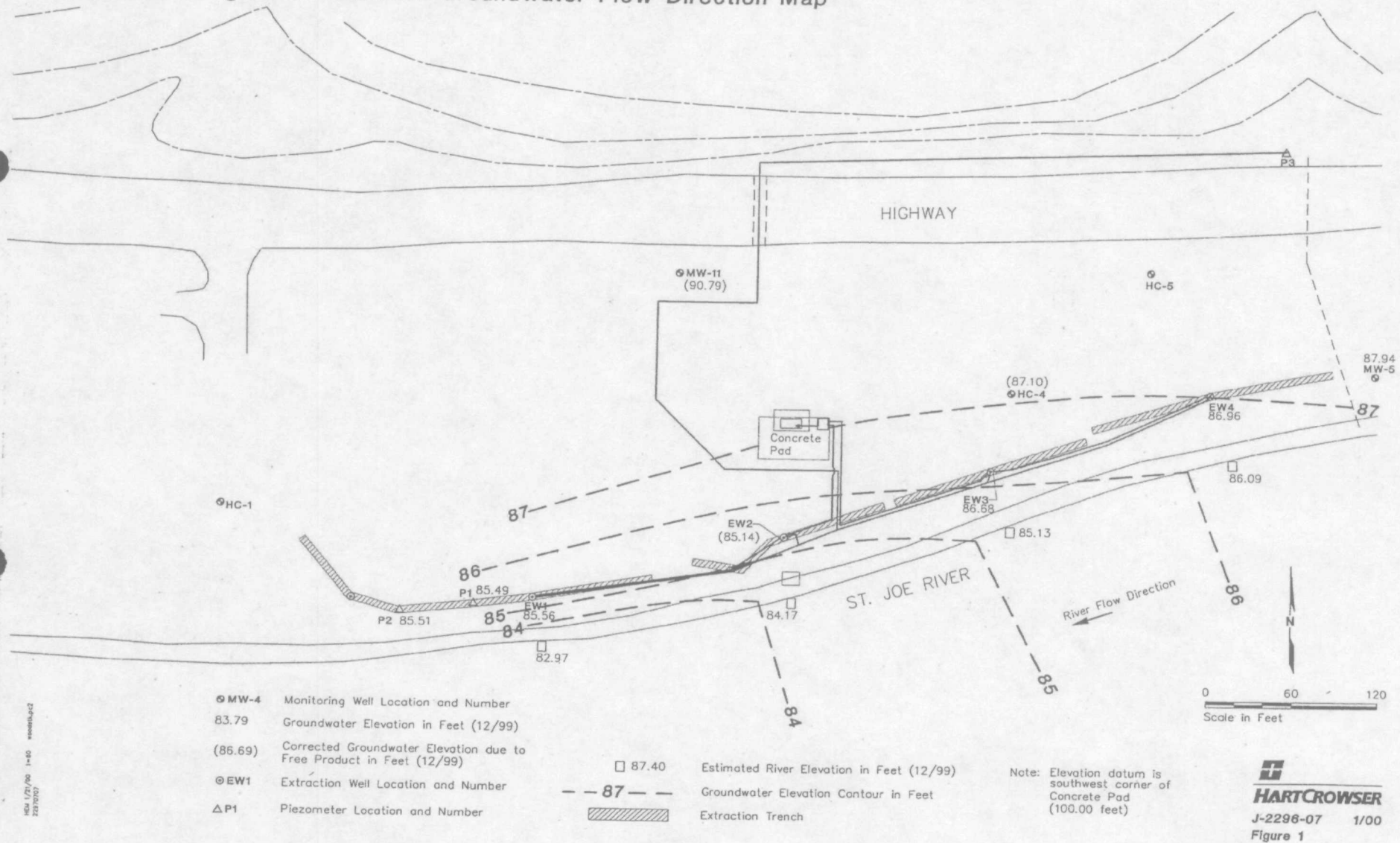
T.O.C. - Top of Casing

ND - Not Detected

NA - Not Available

NM - Not Measured

Avery Landing Fourth Quarter Groundwater Flow Direction Map





HARTCROWSER
Delivering smarter solutions

www.hartcrowser.com

March 8, 2000

Anchorage

Mr. Gregory Rapp
Construction Services Manager
Potlatch Corporation
1100 Railroad Avenue
P.O. Box 386
St. Maries, Idaho 83861

Boston

Re: 1999 Annual Performance Report
Avery Landing Recovery System
J-2296-07

Chicago

Dear Mr. Rapp:

Denver

Hart Crowser is pleased to present the Annual Performance Report for 1999 for the free product recovery system at the Avery Landing site. This letter report includes the following three sections, as required by your Consent Order with the State of Idaho Department of Health and Welfare, Division of Environmental Quality (IDEQ):

Fairbanks

- ▶ **Volume of Product Recovered.** The total amount of product recovered during the year, and the destination of the recovered product;
- ▶ **Recovery System Effectiveness.** An analysis of the effectiveness of the recovery system with respect to free product capture; and
- ▶ **2000 Schedule.** A schedule for product and water level monitoring in 2000. In addition, at the request of Potlatch we also present information on:
- ▶ **Suggestions for Future Site Work.** A description of suggested site activities, order of magnitude costs, and currently unknown information.

Jersey City

Juneau

Long Beach

System performance data (groundwater elevations and free product thicknesses) for 1999 were reported in the quarterly performance reports submitted to the IDEQ.

Portland

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MAR 10 2000

Seattle

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VOLUME OF PRODUCT RECOVERED

During 1999, the system recovered approximately 13,000 gallons of free product from the extraction trenches at the site. Approximately 250 gallons of free product have been collected over the life of the project. The First Quarter 1999 Performance Report addressed an error in the free product estimate for the 1998 monitoring year. The current volume estimate reflects the correction to the previous error and volume calculations based on liquid levels in the free product storage tank.

RECOVERY SYSTEM EFFECTIVENESS

Our evaluation of the recovery system effectiveness in capturing free phase hydrocarbon product before it reaches the river is based on capture zone analysis and the amount of free product removed from the river using oil absorbent booms.

Pump Failures and Shutdowns

Pump failure in well EW-4 was noted during the March 18, 1999, site visit. The pump and motor were replaced on April 6, 1999.

Groundwater Capture

Groundwater capture was maintained on the majority of the site during the 1999 operating period. High groundwater flows in the spring and winter caused temporary upsets to the operation of the free product recovery system. Spring runoff from abnormally deep snow pack and winter rains temporarily over-loaded the groundwater system. The extraction well pumps were not able to pump enough groundwater to maintain capture zones near the St. Joe River. The system remained in operation during the high water events, no equipment malfunctions were noted, and free product recoveries were consistent throughout the monitoring period. We do not believe the temporary upsets to system performance indicate significant problems with the recovery system. Furthermore, there was no increase in the sheen noted within the boom during this period, indicating no significant impacts to the St. Joe River. *That's because during high run-off periods the booms aren't in the river!*

Implications for Future Operation

The system continued to be effective in intercepting free product. It is anticipated that only wells EW-2, EW-3, and EW-4 will need to be utilized during the 2000 operating season. Previous monitoring seasons included three quarters of monitoring, as the system was only



utilized for 9-month periods. The 1999 monitoring season included four quarterly monitoring events as the free product recovery system operated continuously during 1999. The system will continue to run year-round for the 2000 monitoring season.

2000 SCHEDULE

The project schedule for the 2000 monitoring season is provided in Table 1, located at the end of this report. The proposed schedule may change due to weather conditions and is based on the results from previous years of sampling.

POSSIBLE SYSTEM IMPROVEMENTS

IDEQ and the United States Environmental Protection Agency (EPA) have indicated the need for more protection of the St. Joe River. ~~The St. Joe River has the potential to be a significant source of contamination to the river. The current system of free product recovery is not sufficient to protect the river. The system is unable to remove the free product from the river. The system is unable to remove the free product from the river. The system is unable to remove the free product from the river.~~ One possible remediation method to address the downgradient product is to excavate the existing shoreline and place an impermeable barrier upgradient of the river to block subsurface migration of free phase hydrocarbons (see Figure 1). Clean cover material would be placed over the impermeable barrier to restore the appearance and function of the shoreline. Figure 2 shows a generalized cross section of the repaired bank. The bottom elevation of the impermeable barrier will be sufficient to prevent migration of free phase hydrocarbons to the river, but not significantly impact the flow of groundwater.

Complete removal of free product in shoreline soil will require excavation below the normal low water elevation of the St. Joe River. One possible solution for excavating below the riverbed grade is the installation of a water-filled barrier in the river channel to temporarily divert water flow around the excavation at the edge of the bank. The water-filled barrier would have less of an impact on the existing riverbed, and would be easier to remove than a sandbag or gravel dam. The permit process for this work has not been researched to determine its viability.

LIMITATIONS

Work for this project was performed, and this letter prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed in the



Potlatch Corporation
March 8, 2000

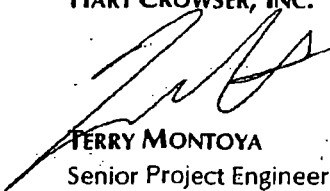
J-2296-07
Page 4

same or similar location, at the time the work was performed. It is intended for the exclusive use of the Potlatch Corporation for specific application to the referenced property.

If additional information or clarification is required, please call Terry Montoya at (206) 324-9530.

Sincerely,

HART CROWSER, INC.



TERRY MONTOYA
Senior Project Engineer
twm@hartcrowser.com



MATTHEW F. SCHULTZ, P.E.
Senior Associate
mfs@hartcrowser.com

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Attachments:

Table 1 - Avery Landing Recovery System Project Schedule for 2000 Monitoring Year
Figure 1 - Avery Landing Site Map
Figure 2 - Cross Section Detail

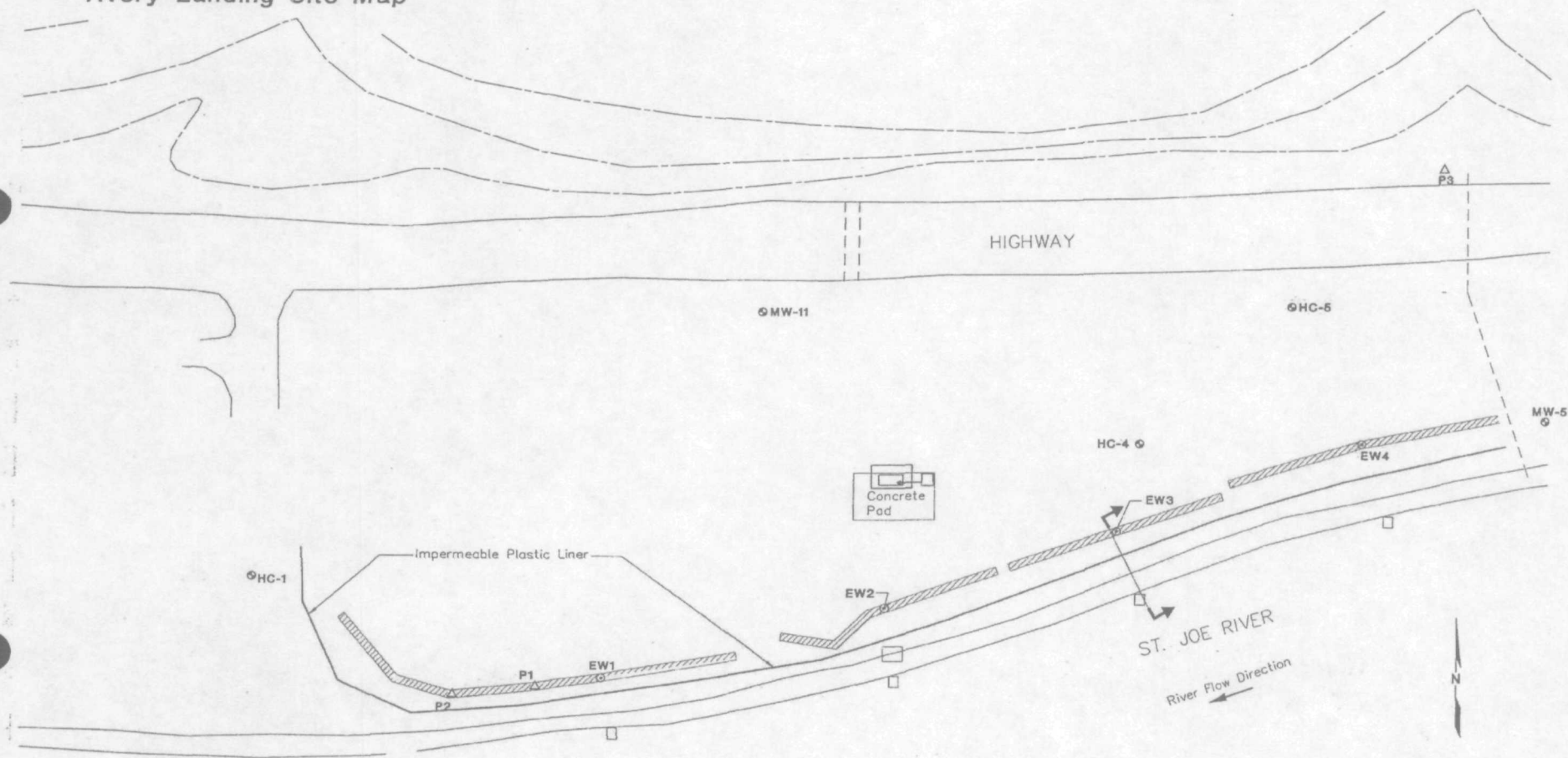
cc: Kreg Beck, Idaho Department of Environmental Quality



Table 1 - Avery Landing Recovery System Project Schedule for 2000 Monitoring Year

Scheduled Milestone	Date
Conduct First Quarter Monitoring	March 30, 2000
Submit First Quarter Monitoring Report	April 21, 2000
Conduct Second Quarter Monitoring	June 8, 2000
Submit Second Quarter Performance Report	July 7, 2000
Conduct Third Quarter Monitoring	September 7, 2000
Submit Third Quarter Performance Report	October 6, 2000
Conduct Fourth Quarter Monitoring	December 8, 2000
Submit Fourth Quarter Performance Report	January 12, 2001
Submit Annual Report	February 9, 2001






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Avery Landing Site Map



-  Extraction Trench
-  Cross Section Location and Designation

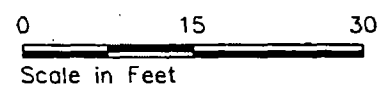
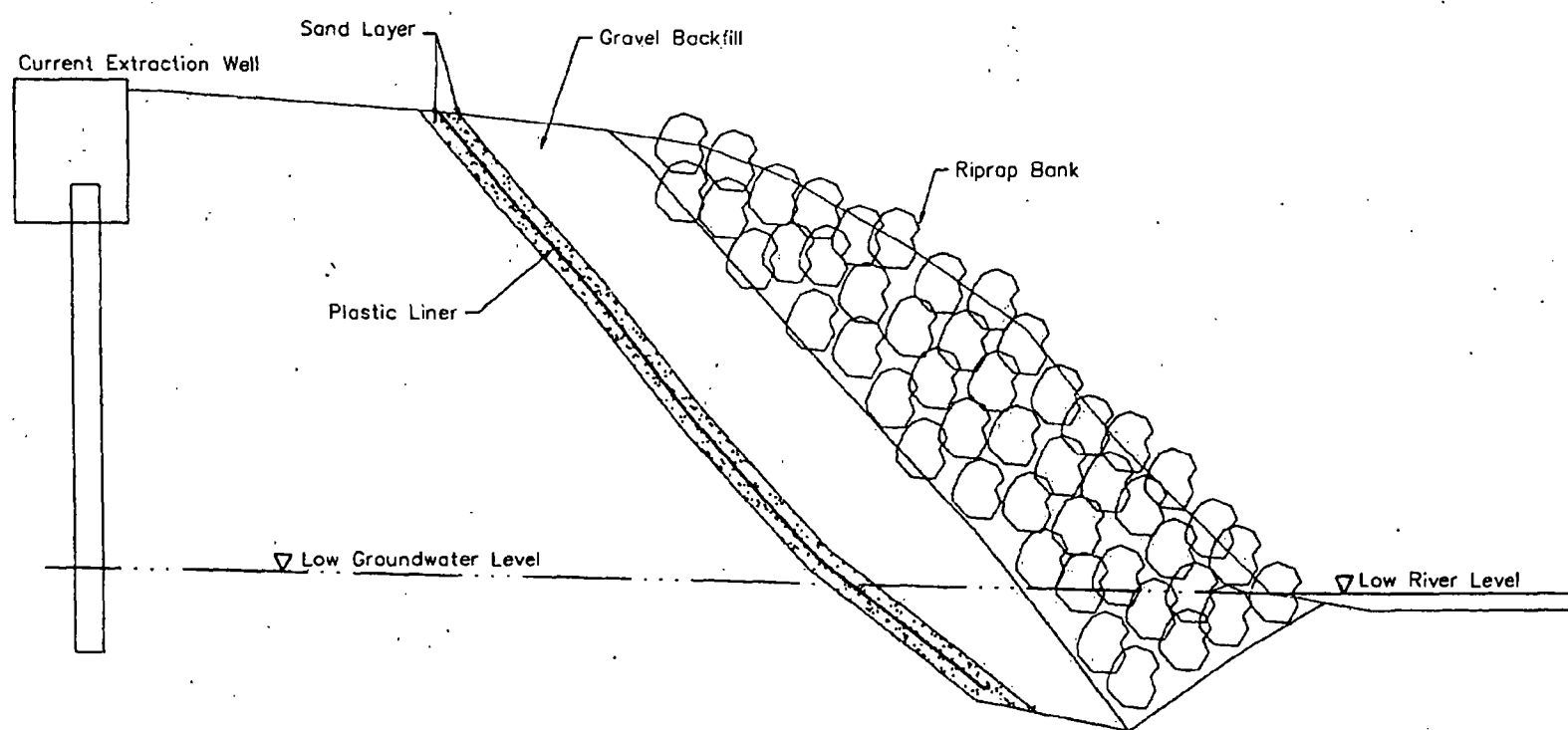
Note: Elevation datum is southwest corner of Concrete Pad (100.00 feet)

-  MW-4 Monitoring Well Location and Number
-  EW1 Extraction Well Location and Number
-  P1 Piezometer Location and Number
-  HC-5 Monitoring Well Lost during Construction (1997)
-  River Elevation Measuring Point

0 60 120
Scale in Feet

HARTCROWSER
J-2296-07 3/00
Figure 1

Cross Section Detail



HARTCROWSER
J-2296-07 3/00
Figure 2

FILE NOTE

By: Kreg Beck

Date: 12/5/99

Subject: Ideas for changing the remediation strategy at Avery Landing

After visiting with Potlatch and EPA about alternate remediation strategies at this site, the following are some ideas that may be worth pursuing:

- Stream ^{bed} remediation. Excavate the bank in the contaminated area and replace w/ an impermeable barrier, clean fill, and rip-rap. Use high permeable materials on up-gradient side of barrier so gw can flow underneath barrier into river. Install several manhole entry points while reconstructing bank, to be used to monitor gw and put sorbents into, if needed.
- Recharacterize site w/ geoprobes or backhoe pits to determine extent and concentration of plume. Trench and remove significant areas of plume. Add stabilizers and bioenhancement to remaining contamination to make contaminants more stationary and speed up the biodegradation process.
- Possibly trench perimeter of upgradient portion of contaminant plume and fill w/ impermeable material to divert gw around area.
- Use existing interceptor trenches to monitor and recover floating product w/ absorbents.

January 21, 2000

Anchorage

Mr. Gregory A. Rapp
Construction Services Manager
Potlatch Corporation
1100 Railroad Avenue
P.O. Box 386
St. Maries, Idaho 83861

Boston

Chicago

Re: Fourth Quarter 1999 Performance Report
Avery Landing Recovery System
J-2296-07

Denver

Dear Mr. Rapp:

Hart Crowser is pleased to present the Fourth Quarter 1999 Performance Report for the Avery Landing free product recovery system. This letter report presents the fourth quarter groundwater elevations, product thickness measurements, and recovered free product volume.

Fairbanks

GROUNDWATER AND PRODUCT QUARTERLY MONITORING

Jersey City

Four extraction wells (EW-1 through EW-4), two piezometers (P1 and P2), and three monitoring wells (HC-4, MW-5, and MW-11) were monitored on December 2, 1999. Well and piezometer locations are shown on Figure 1. Monitoring well HC-1 was below standing water and was not measured. At each monitoring location, depth to product and depth to groundwater measurements were performed using a Flexidip, a free product measuring device. River elevations, based on actual data from EW-2 and the average slope of the river, are noted in Table 1. The Third Quarter 1999 Performance Report provided an explanation for the use of calculated river elevations when conditions do not favor direct measurement.

Juneau

Long Beach

EXTRACTION WELL OPERATION

Though the extraction system was running and maintaining a trough for free product to capture, it was not maintaining absolute capture. During normal operation the bottom of the trough created by the pumping system is lower than the river elevation. During periods of low river flow it is normal for the river elevation to be less than the trough bottom. This

Portland

Seattle



monitoring event is the first time, when the system was operating properly, that we have seen the river level lower than the trough during the "wet" season. We feel this was caused by the rapid fluctuating river level during the last monitoring event. The local Potlatch representative, Don Green, indicated the river had been fluctuating 4 to 5 feet in the month of November. This will be documented by the USGS data when they are released in 6 months. When the river level decreases quickly the groundwater level lags behind. The pumping system is not able to depress the groundwater level as fast as the river fluctuates. The effect of this is that the oil that was already past the treatment trench has a tendency to flow toward the river instead of the trench. This oil is then captured in the oil booms along the river bank. Possible system modifications to minimize the dependency of system on the oil booms will be discussed in the yearly report.

FREE PRODUCT RECOVERY

The treatment system recovered approximately 5 gallons of free phase hydrocarbons since the September 1999 monitoring event and has collected roughly 25 gallons of free phase hydrocarbons during the 1999 operating period. The volume of product collected during the fourth quarter is a conservative estimate based on the thickness of the product layer in the free product storage tank. Recent removal of water from the storage tank decreased the liquid level within the tank and resulted in free product collecting on the tank walls. The volume of free product on the tank walls is expected to be approximately 5 gallons.

PROJECT SCHEDULE

This performance evaluation concludes monitoring activities at the site for the 1999 project year. The 1999 Annual Summary Report will be submitted by February 5, 2000.

LIMITATIONS

Work for this project was performed, and this letter report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar location, at the time the work was performed. It is intended for the exclusive use of the Potlatch Corporation for specific application to the referenced property.



Potlatch Corporation
January 21, 2000

J-2296-07
Page 3

If additional information or clarification is required, please call Terry Montoya at
(206) 324-9530.

Sincerely,

HART CROWSER, INC.

TERRY MONTOYA
Project Engineer

MATT SCHULTZ, P.E.
Senior Associate Engineer

F:\DATA\JOBS\229607\ptlc4thqt99(ltr).doc

Attachments:

Table 1 - Avery Landing Groundwater and River Monitoring Data

Figure 1 - Avery Landing Fourth Quarter Groundwater Flow Direction Map

cc: Kreg Beck, Idaho Department of Environmental Quality

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 1 of 6

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
EW-1	10/27/94	ND	11	0	95.34	84.34
	6/30/95	ND	10.9	0	95.34	84.44
	9/21/95	11.25	11.27	0.02	95.34	84.07
	7/11/96	ND	9.74	0	95.34	85.60
	9/11/96	ND	10.88	0	95.34	84.46
	11/5/96	ND	11.94	0	95.34	83.40
	7/17/97	ND	10.38	0	95.34	84.96
	10/9/97	ND	13.17	0	95.34	82.17
	6/25/98	ND	10.01	0	95.34	85.33
	8/12/98	NM	10.52	0	95.34	84.82
	10/22/98	Sheen	10.86	0	95.34	84.48
	3/18/99			0	95.34	85.57
	6/22/99	ND	11.68	0	95.34	83.66
	9/16/99	ND	10.72	0	95.34	84.62
	12/2/99	ND	9.78	0	95.34	85.56
EW-2	10/27/94	ND	10.37	0	95.24	84.87
	6/30/95	10.57	10.89	0.32	95.24	84.35
	9/21/95	13.9	13.92	0.02	95.24	81.32
	7/11/96	11.03	11.66	0.63	95.24	83.58
	9/11/96	Sheen	14.00	0	95.24	81.24
	11/5/96	Sheen	12.27	0	95.24	82.97
	7/17/97	8.99	9.09	0.1	95.24	86.15
	10/9/97	Sheen	15.44	0	95.24	79.80
	6/25/98	9.19	9.64	0.45	95.24	85.60
	8/12/98	NM	9.99	0	95.24	85.25
	10/22/98	Sheen	10.94	0	95.24	84.30
	3/18/99	10.17	10.27	0.1	95.24	84.97
	6/22/99	11.3	11.31	0.01	95.24	83.93
	9/16/99	15.32	15.35	0.03	95.24	79.89
	12/2/99	9.91	10.1	0.19	95.24	85.14
EW-3	10/27/94	ND	10.05	0	95.78	85.73
	6/30/95	9.35	9.8	0.45	95.78	85.98
	9/21/95	10.92	11.08+	0.16	95.78	84.70
	7/11/96	8.53	8.64	0.11	95.78	87.14
	9/11/96	10.75	11.70	0.95	95.78	84.08
	11/5/96	Sheen	11.8	0	95.78	83.98
	7/17/97	9.13	9.33	0.2	95.78	86.45
	10/9/97	10.9	11.68	0.78	95.78	84.10
	6/25/98	8.78	9.43	0.65	95.78	86.35
	8/12/98	NM	11	0	95.78	84.78
	10/22/98	12.58	13.38	0.8	95.78	82.40
	3/18/99	9.03	9.23	0.2	95.78	86.55
	6/22/99	11.1	11.25	0.15	95.78	84.53
	9/16/99	10.76	11.06	0.3	95.78	84.72
	12/2/99	9.04	9.1	0.06	95.78	86.68

2296-07\Pdc1299.xls - Monitoring Results

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 2 of 6

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
EW-4	10/27/94	ND	8.05	0	94.32	86.27
	6/30/95	7.84	7.85	0.01	94.32	86.47
	9/21/95	8.22	8.24	0.02	94.32	86.08
	7/11/96	Sheen	6.44	0	94.32	87.88
	11/5/96	Sheen	8.08	0	94.32	86.24
	7/17/97	Sheen	5.43	0	94.32	88.89
	10/9/97	Sheen	7.11	0	94.32	87.21
	6/25/98	5.28	5.3	0.02	94.32	89.02
	8/12/98	NM	8.98	0	94.32	85.34
	10/22/98	ND	8.98	0	94.32	85.34
	3/18/99	5.18	5.26	0	94.32	89.06
	6/22/99	Sheen	9	0	94.32	85.32
	9/16/99	8.45	9.27	0.82	94.32	85.05
	12/2/99	7.31	7.36	0.05	94.32	86.96
HC-1	10/27/94	ND	13.25	0	97.50	84.25
	6/30/95	ND	12.00	0	97.50	85.50
	9/21/95	NM	13.42	0	97.50	84.08
	7/11/96	ND	11.92	0	97.50	85.58
	9/11/96	ND	12.90	0	97.50	84.60
	11/5/96	Could not locate due to snow				
	7/17/97	ND	11.27	0	97.50	86.23
	10/9/97	ND	12.87	0	97.50	84.63
	6/25/98	ND	11.85	0	97.50	85.65
	8/12/98	NM	12.97	0	97.50	84.53
	10/22/98	ND	13.1	0	97.50	84.40
	3/18/99	ND	11.7	0	97.50	85.80
	6/22/99	ND	9.28	0	97.50	88.22
	9/16/99	ND	12.98	0	97.50	84.52
	12/2/99	Well Under Standing Water				
HC-4	10/27/94	13.3	15.34	2.04	98.94	83.60
	6/30/95	11.89	15.49	3.6	98.94	83.45
	9/21/95	13.67	NM	NM	98.94	85.27
	7/11/96	11.58	12.93	1.35	98.94	86.01
	9/11/96	13.53	13.93	0.40	98.94	85.01
	11/5/96	11.82	13.62	1.80	98.94	85.32
	7/17/97	11.65	13.25	1.60	98.94	85.69
	10/9/97	12.67	14.92	2.25	98.94	84.02
	6/25/98	11.53	12.49	0.96	98.94	86.45
	8/12/98	NM	13.9	NM	98.94	85.04
	10/22/98	10.3	14.7	4.40	98.94	84.24
	3/18/99	10.5	14.05	4.45	98.94	84.89
	6/22/99	16.9	13.9	4.00	98.94	85.04
	9/16/99	15.89	17.57	1.68	98.94	81.37
	12/2/99	10.84	11.84	1.00	98.94	87.10

2296-07\Plt1299.xls - Monitoring Results

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 3 of 6

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
HC-5	11/5/96	ND	11.22	0	97.95	86.73
	7/17/97	Monument under standing water				
	10/9/97	Monument under standing water				
	6/25/98	Lost during road construction				
MW-4	9/14/94	ND	12.88	0	99.76	86.88
	6/30/95	ND	10.19	0	99.76	89.57
	9/21/95	ND	11.95	0	99.76	87.81
	7/11/96	Sheen	10.18	0	99.76	89.58
	9/11/96	Sheen	11.33	0	99.76	88.43
	11/5/96	Lost during road construction				
MW-5	10/27/94	ND	10.45	0	97.76	87.31
	6/30/95	ND	9.13	0	97.76	88.63
	9/21/95	ND	10.83	0	97.76	86.93
	7/11/96	ND	8.98	0	97.76	88.78
	9/11/96	ND	10.71	0	97.76	87.05
	11/5/96	ND	10.65	0	97.76	87.11
	7/17/97	ND	8.75	0	97.76	89.01
	10/9/97	ND	10.89	0	97.76	86.87
	6/25/98	ND	8.56	0	97.76	89.20
	8/12/98	NM	10.68	0	97.76	87.08
	10/22/98	ND	13.5	0	97.76	84.26
	3/18/99	ND	8.8	0	97.76	88.96
	6/22/99	ND	6.44	0	97.76	91.32
	9/16/99	ND	10.8	0	97.76	86.96
	12/2/99	ND	9.82	0	97.76	87.94
MW-11	9/14/94	12	NA	NA	98.16	NA
	6/30/95	5.54	7.25	1.71	98.16	90.41
	7/11/96	6.34	10.00	3.66	98.16	88.16
	9/11/96	3.25	7.20	3.95	98.16	90.96
	11/5/96	3.05	7.20	4.15	98.16	90.96
	7/17/97	6.33	9.99	3.66	98.16	88.17
	8/12/98	NM	3.90	NM	98.16	94.26
	10/22/98	6.96	8.00	1.04	98.16	90.16
	9/16/99	Not Measured				
	12/2/99	6.9	7.37	0.47	98.16	90.79

2296-07\Plc1299.xls - Monitoring Results

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 4 of 6

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
P-1	10/27/94	ND	17.31	0	101.42	84.11
	6/30/95	ND	16.72	0	101.42	84.70
	9/21/95	ND	17.4	0	101.42	84.02
	7/11/96	ND	15.87	0	101.42	85.55
	9/11/96	ND	16.98	0	101.42	84.44
	11/5/96	ND	17.06	0	101.42	84.36
	7/17/97	ND	15.34	0	101.42	86.08
	10/9/97	ND	17.64	0	101.42	83.78
	6/25/98	ND	14.53	0	101.42	86.89
	8/12/98	NM	16.72	0	101.42	84.70
	10/22/98	ND	15.6	0	101.42	85.82
	3/18/99	ND	15.65	0	101.42	85.77
	6/22/99	ND	13	0	101.42	88.42
	9/16/99	ND	16.84	0	101.42	84.58
	12/2/99	ND	15.93	0	101.42	85.49
P-2	10/27/94	ND	15.87	0	100.06	84.19
	6/30/95	ND	15.26	0	100.06	84.80
	9/21/95	ND	16.04	0	100.06	84.02
	7/11/96	ND	14.52	0	100.06	85.54
	9/11/96	ND	15.62	0	100.06	84.44
	11/5/96	ND	15.08	0	100.06	84.98
	7/17/97	ND	13.92	0	100.06	86.14
	10/9/97	ND	16.09	0	100.06	83.97
	6/25/98	ND	15.95	0	100.06	84.11
	8/12/98	NM	15.3	0	100.06	84.76
	10/22/98	NM	16.95	0	100.06	83.11
	3/18/99	NM		0	100.06	86.02 ****
	6/22/99	ND	11.65	0	100.06	88.41
	9/16/99	ND	15.46	0	100.06	84.60
	12/2/99	ND	14.55	0	100.06	85.51
95.34 River at EW-1	10/27/94					83.12 *
	6/30/95					84.03 **
	9/21/95					82.24
	7/11/96					83.74 ***
	9/11/96					82.56
	11/5/96					83.16
	7/17/97					82.39
	10/9/97					83.00
	6/25/98					85.22
	8/12/98					85.42
	10/22/98					85.00
	3/18/99					83.93
	6/22/99					83.93
	9/16/99					78.28 ?
	12/2/99					82.97

2296-07\Ptlc1299.xls - Monitoring Results

Hart Crowser
J-2296-07

K 00025

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 5 of 6

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
95.24 River at EW-2	10/27/94					84.41
	6/30/95					85.32
	9/21/95					83.53 ✓
	7/11/96					85.03
	9/11/96					83.85
	11/5/96					83.59
	7/17/97					85.35
	10/9/97					84.20
	6/25/98					86.42
	8/12/98					86.62
	10/22/98					86.20
	3/18/99					85.13
	6/22/99					85.13
	9/16/99					79.48 P
	12/2/99					84.17
95.98 River at EW-3	10/27/94					85.16 *
	6/30/95					86.07
	9/21/95					84.28
	7/11/96					85.78 ***
	9/11/96					84.60
	11/5/96					84.10 ✓
	7/17/97					86.31
	10/9/97					85.16
	6/25/98					85.16
	8/12/98					85.65
	10/22/98					85.23
	3/18/99					86.10
	6/22/99					89.45
	9/16/99					85.29
	12/2/99					85.13

2296-07\Plc1299.xls - Monitoring Results

Hart Crowser
J-2296-07

K 00026

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 6 of 6

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
94.32 River at EW-4	10/27/94					86.49 *
	6/30/95					87.40
	9/21/95					85.61 ✓
	7/11/96					87.11 ***
	9/11/96					85.93
	11/5/96					86.44
	7/17/97					87.27
	10/9/97					86.12
	6/25/98					88.34
	8/12/98					88.54
	10/22/98					88.12
	3/18/99					87.05
	6/22/99					90.40
	9/16/99					86.89
	9/16/99					86.09

Notes:

All measurements in feet.

* River elevation was extrapolated from the river surface slope measured in 1995 and the river elevation measured south of EW-2 in 1994.

** River elevation was extrapolated from river surface slope, based on river elevations measured south of EW-2, EW-3, and EW-4 in 1995.

*** River elevation was extrapolated from river surface slope, and the wood dock benchmark.

T.O.C. - Top of Casing

ND - Not Detected

NA - Not Available

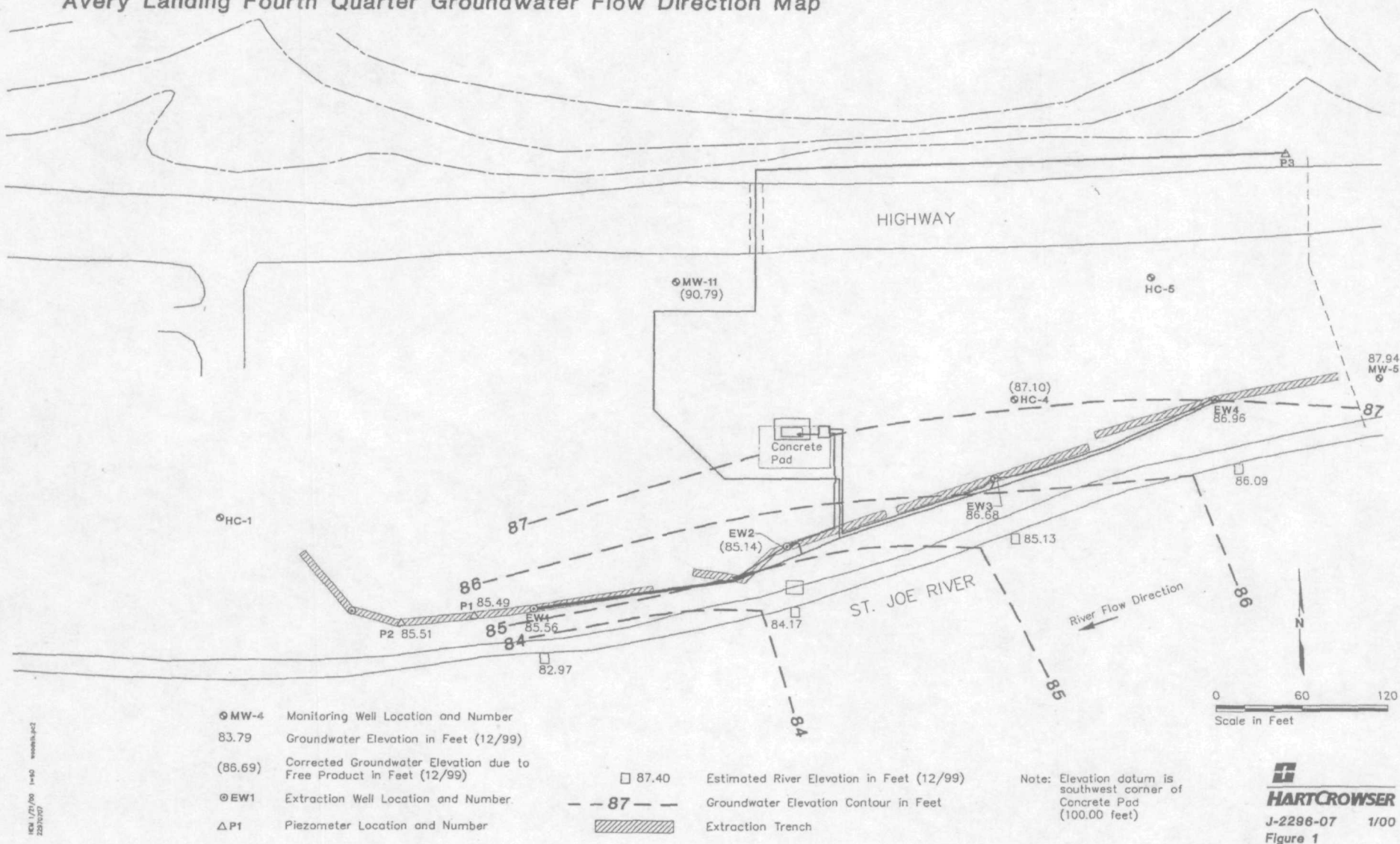
NM - Not Measured

2296-07\Plc1299.xls - Monitoring Results

Hart Crowser
J-2296-07

K 00027

Avery Landing Fourth Quarter Groundwater Flow Direction Map



RECEIVED

FEB 11 2000

**IDHW-DEQ
Coeur d'Alene Field Office**

Potlatch

**Potlatch Corporation
Western Division Woodlands**

St. Joe Area
P.O. Box 386
St. Maries, Idaho 83861-0386
Telephone (208) 245-4146

February 10, 2000

**Idaho Department of Environmental Quality
2110 Ironwood Parkway
Coeur d' Alene, ID 83814**

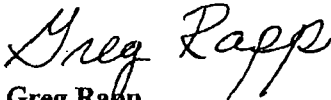
Attention: Kreg Beck

Dear Kreg:

Potlatch is proposing a riverbank rehabilitation project to prevent any further petroleum product residue from reaching the St. Joe River. Our proposal is to excavate the riverbank back from the river, for a width of 10 feet, and to a depth 2 feet below the low water level as shown on the attached Typical Section. This excavated material would then be land farmed on the area between the collection trenches and the highway, as shown on the Overhead View. The proposed area to be treated is also shown on the Overhead View. Once the material has been excavated, an impervious polyethylene liner would be placed on the bank from top to bottom and full length of project. This liner will be protected from puncture with fine material or a non-woven geotextile cloth on each side. Clean fill would then be imported and placed over the liner to a depth of approximately 6 feet. Rip-rap would then be placed over the fill to an approximate depth of 4 feet to complete the bank rehabilitation.

If you have any questions regarding this proposal, before our meeting on February 17th, call me at (208) 245-6433.

Sincerely,

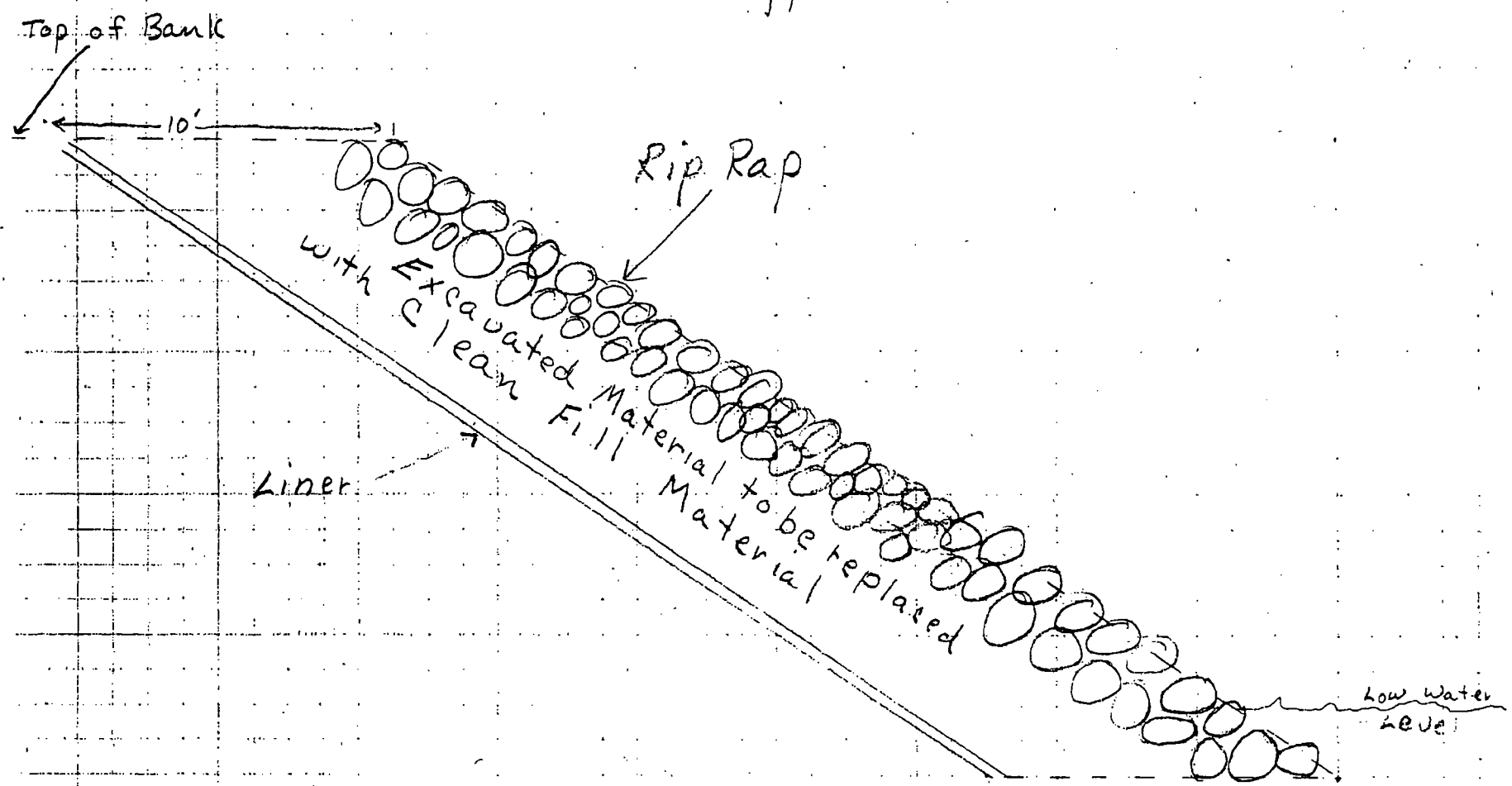


**Greg Rapp
Construction Superintendent**

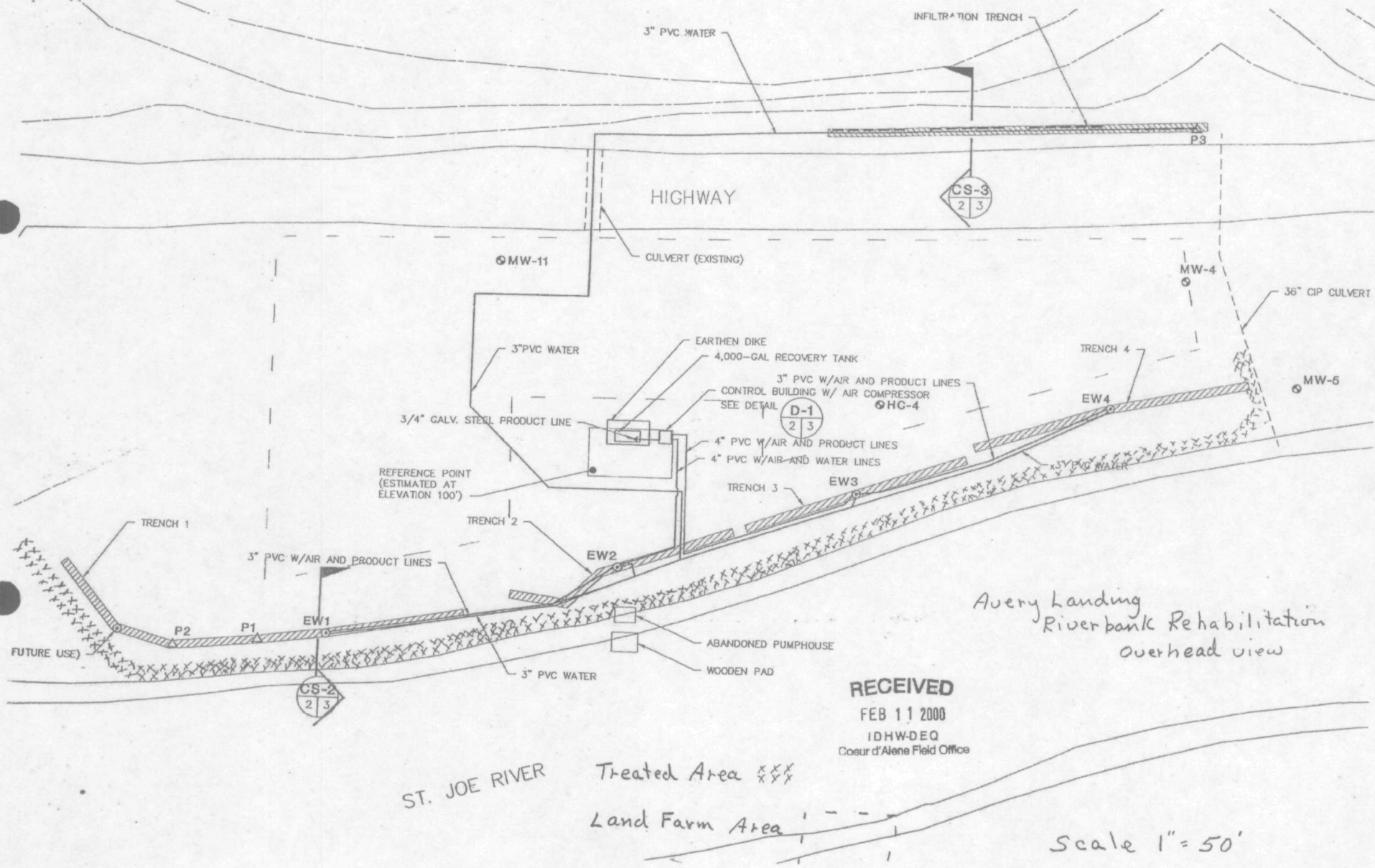
GR:sh

**Cc: John Emery
Mike McAllister
Norm Linton**

Avery Landing Riverbank Rehabilitation Typical Section



Scale 1" = 4'



Avery Landing
Riverbank Rehabilitation
overhead view

RECEIVED
FEB 11 2000
IDHW-DEQ
Coeur d'Alene Field Office

ST. JOE RIVER

Treated Area xxx

Land Farm Area

Scale 1" = 50'



XC: Mike McAllister
John Emery
orig: Norm
STATE OF IDAHO
DIVISION OF
ENVIRONMENTAL QUALITY

Received
FEB 29 REC'D
St. Joe Woodlands

2110 Ironwood Parkway • Coeur d'Alene, Idaho 83814-2648 • (208) 769-1422

Dirk Kempthorne, Governor
C. Stephen Allred, Administrator

February 28, 2000

Greg Rapp
Construction Services Manager
Potlatch Corporation
1100 Railroad Avenue
PO Box 386
St. Maries, ID 83861

Dear Mr. Rapp:

On February 17, 2000 a meeting was held at the Division of Environmental Quality (DEQ) office in Coeur d'Alene to discuss the status of the remediation at the Avery Landing site near Avery, Idaho. Participants included yourself, Norm Linton, and John Emery (via telephone) as Potlatch representatives; Greg Weigel of the Environmental Protection Agency; and John Sutherland and myself from DEQ. The focus of the meeting was to discuss the failure of the remediation system currently in place to meet the remediation goals outlined in the Consent Order (CO). The purpose of this letter is to document the results of the meeting and present a formal modification of the CO which provides for an alternative approach to site remediation. All parties agreed that an accelerated schedule needs to be implemented to facilitate all construction activities that will be required this year, as it is everyone's desire to implement the new remediation system in 2000.

We all agreed that, as a minimum, contaminated material and soils adjacent to the St. Joe River will need to be removed. DEQ has checked with state agencies that may have authorities related to stream bank alteration. The Department of Water Resources (DWR) may require a permit and should be notified of proposed stream bank changes. The Department of Fish and Game (DFG) does not require any permit or agreement but would be happy to lend technical support as the project develops and therefore should be copied on proposed plans. The DWR contact is Bob Haynes at 1910 Northwest Boulevard in Coeur d'Alene, 83814; and the DFG contact is Chip Corsi at 2750 Kathleen in Coeur d'Alene, 83814.

The attached Consent Order Modification spells out the remedial approach agreed to in the meeting and calls for a Statement of Work and time lines to accomplish the remedial alternatives. If the terms of the Modification are satisfactory to Potlatch, please sign and date it, and return it to this office by March 10, 2000. If you have any questions, please contact me at 769-1422.

Sincerely,

Kreg Beck
Remediation Project Specialist

c: Norm Linton, Potlatch, St. Maries; Greg Weigel, EPA, Boise



HARTCROWSER

Delivering smarter solutions

Xc: John Emery
Mike McAllister

Orig: Norm

Received

www.hartcrowser.com

April 13, 2000

APR 17 REC'D
St. Joe Woodlands

Mr. Norm Linton
Area Manager
Potlatch Corporation
1100 Railroad Avenue
P.O. Box 386
St. Maries, Idaho 83861

Anchorage

Boston

Re: Proposal for Test Pit/Monitoring Well Installation for Free Product Delineation and Plans and Specifications for Installation of the Containment Wall
Avery Landing Site
Avery, Idaho
00-14-1107

Chicago

Denver

Dear Mr. Linton:

This letter proposal presents our scope of work and cost estimate for test pit/monitoring well installations for free product delineation and preparation of plans and specifications for installation of the containment wall at the Avery Landing Site.

Fairbanks

The objective of this proposed work is to determine the extent of the free product on the site, provide monitoring wells to track the status of the free product, and to provide plans and specification for the containment wall that Potlatch can use to bid the Containment Wall Project.

Jersey City

After evaluating drilling technologies that exist, we think we have found a more accurate and cost-effective method for completing the free product delineation of the site. The method is explained in the Approach section with the Scope of Work following. Our Cost Estimate, Schedule, Terms and Conditions, and attachments complete the proposal.

Juneau

APPROACH

Long Beach

To determine the extent of the free product, we propose to use an excavator to excavate test pits to observe subsurface conditions around the site. This method will allow us to visually determine and document the edge of the free product plume. Based on our experience on the site, the plume edge will be defined by the presence, or the lack thereof, of black, oil-saturated soils. We also feel an air rotary drill rig would be required to install the borings at a cost of nearly \$75 per foot drilled. We do not think direct push (Geo-

Portland

Seattle

1910 Fairview Avenue East
Seattle, Washington 98102-3699
Fax 206.328.5581
Tel 206.324.9530

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K 00033



probe) or hollow-stem auger drill rig installations will be successful when considering the cobbles present on site. Additionally, if wells are installed to determine the extent of product, the actual edge of the plume will have to be estimated using the depth of product in the well and an estimated slope of the product. Since the depth of product in a well can exaggerate the actual *in situ* depth of free product by a factor of 3, this can lead to an exaggerated plume extent. Therefore, we believe the excavation method will be more cost-effective and more accurate than installing multiple wells.

The secondary purpose of the monitoring wells is to monitor any changes in the free product plume. Since the only data that will be collected is water depth and product thickness, a drinking water well-type installation is not required. Therefore, we propose to install well screens in the test pit excavations created while determining the extent of the free product plume. Additionally, by completing test pits inside of the free product area first and allowing free product to accumulate in these test pits for three days, we can get a more accurate estimate of actual depth of product. This is because the capillary action, thought to cause most of the product depth exaggeration in a well, is significantly reduced in a larger exposed area. Finally by using the relatively accurate location of the product plume edge, we can strategically place, inside the plume area for upgradient wells and outside of the plume area for downgradient wells, the new wells to help determine the speed at which the plume edge is traveling.

The final task is preparation of bid specifications for the installation of a containment wall with a small amount of oversight during installation. The data obtained from the explorations would be used to determine the length, depth, and shape of the containment wall. Using the estimated product volume and extent, a mass balance model would be developed to show that the containment wall with periodic free product removal would not allow free product to escape the site. The specifications would provide a conceptual diagram of materials to be used for the wall installation. The actual slope of the wall and thicknesses of the materials being placed would be determined by Potlatch during construction based on constructability criteria. Additionally, we understand that Potlatch will obtain any permits required for the construction of the containment wall.

SCOPE OF WORK

Task 1—Delineation of Free Product Plume Area and Well Installation

Using an excavator we will excavate up to ten 20- to 60-foot-long observation test pits at the proposed locations shown on Figure 1. Test pits 1 and 2, provided free product is encountered, will be used as a free product pits and left open for the duration of the



exploration work, approximately three days. Each additional test pit will be extended until a plume edge is encountered and documented. Excavated material will be used as backfill in the trenches using excavator bucket for compaction.

Well casing will be installed in the observation trenches during the backfilling process. Two-inch-diameter slotted pipe finished at least 3 feet above grade will be used for the well completion. The wells will be less than 18 feet in depth below grade. In the upgradient test pits, the wells will be completed inside of the free product plume area. In downgradient test pits, the wells will be completed outside of the plume area. Clean soil from the test pit excavation will be used for the backfill around the downgradient wells.

Task 2—Data Interpretation and Bid Specifications

Using the data from our investigation and Year 2000 second quarter monitoring event, we will develop plans and specifications for the installation of a containment wall. We are assuming that the second quarter monitoring event will be completed at least two weeks after the new wells are installed. This will give more accurate water and product depth data. At a minimum the specification will include:

1. Depth of containment wall versus the lower water elevation in the river;
2. Thickness and material type for the impermeable liner;
3. Plan view of the length and shape of the containment wall;
4. A generalized cross section diagram of the installed containment wall;
5. At least two options for controlling water infiltration from the river into the excavation;
and
6. A generalized method for treating the water generated during construction activities.

COST ESTIMATE AND SCHEDULE

Our estimated cost for this effort on a time and materials not to exceed basis is \$22,200. Table 1 provides a breakdown of the costs to complete the tasks outlined above. These costs are based on the installation and testing of ten test pits/monitoring wells.



Table 1 - Estimated Cost Breakdown

Task	Labor	Direct Costs	Sub Contractor	Total Task Cost
Task 1— Delineation of Free Product Plume Area and Well Installation	\$6,075	\$2,700	\$5,100	\$13,300
Task 2— Data Interpretation and Bid Specifications	\$6,825	\$1,500	\$0	\$ 8,325
Totals	\$12,900	\$4,200	\$5,100	\$22,200

Task 1 includes a 40-hour health safety-trained operator and mobilization of the excavator out of Spokane. This cost can possible be reduced by using local Potlatch contractors. We included our contractor's costs, so you could compare turnkey proposals from your bidders.

Table 2 - Schedule

Activity	Schedule
Task 1	
Authorization to proceed	May 1, 2000
Comments received from Idaho DEQ	May 15, 2000
Mob excavator to site	June 5, 2000
Test pit and well installation	Week of June 5, 2000
Task 2	
Draft Bid Specifications	July 7, 2000
Comments from Potlatch	July 14, 2000
Final Bid Specifications	July 21, 2000
Comments received from Idaho DEQ	July 31, 2000
Field Work	September 11- 29, 2000



Potlatch Corporation
April 13, 2000

00-14-1107
Page 5

TERMS AND CONDITIONS

The scope of work outlined above will be billed in accordance with the attached Rate Schedule. In-house laboratory services and field equipment rental and supplies will be billed in accordance with our Schedule of Laboratory and Field Charges (available upon request). Our services will be performed in accordance with the standard of care of our profession. The attached Terms and Conditions and Rate Schedule, and any other exhibits or attachments referenced herein are incorporated into our agreement with you and by your authorization to proceed, you are agreeing to these terms and conditions.

The cost estimate in this proposal is based on representative hourly rates for various categories of personnel and expected project expenses. Invoices will reflect actual charges based on the current Rate Schedule and Schedule of Laboratory and Field Charges, and may differ from the cost estimate in this proposal. Unless other arrangements have been made, charges will be based on the latest Rate Schedule and Schedule of Laboratory and Field Charges. The Rate Schedule and Schedule of Laboratory and Field Charges are subject to change without notice, and new schedules are issued when dictated by inflationary changes.

Please acknowledge your acceptance of this work by having this letter agreement properly signed and returning a signed copy to us. Any changes to our agreement must be in writing and mutually agreed to. We intend to use the attached example Contract Change form to effectively implement and document any changes. We suggest that any future work done for you be completed as an amendment to this contract.



Potlatch Corporation
April 13, 2000

00-14-1107
Page 6

We appreciate this opportunity to submit our proposal and look forward to your favorable consideration. If we may provide any additional information or clarification of this proposal, please call us.

Sincerely,

HART CROWSER, INC.

Terry Montoya
by AAK
TERRY W. MONTOYA
Senior Project Engineer

Matthew F. Schultz
MATTHEW F. SCHULTZ, P.E.
Associate Chemical Engineer

F:\docs\proposals\00141107.doc

cc: Gregory Rapp, Construction Service Manager, Potlatch Corporation

Attachments:

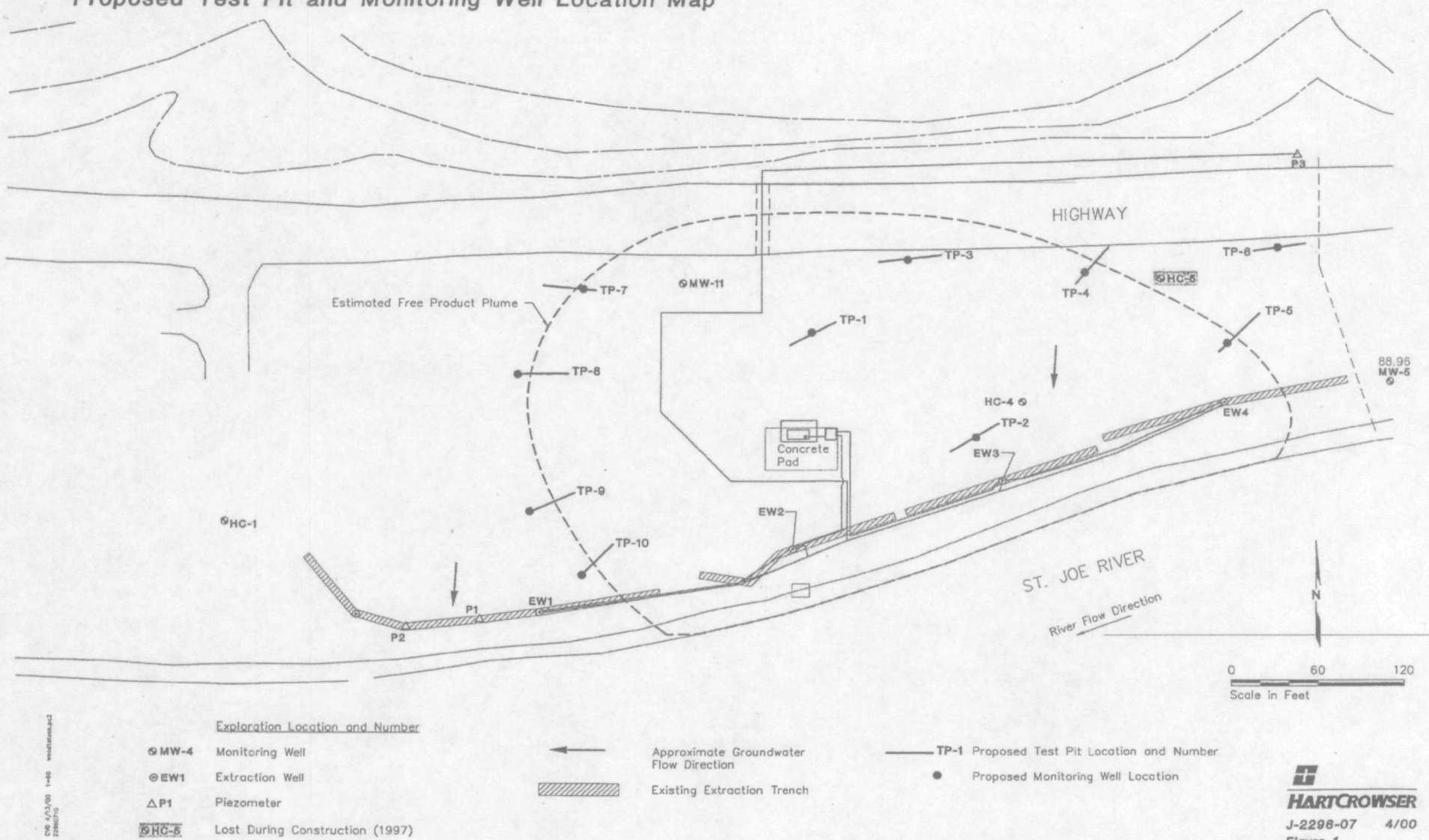
Figure 1 - Proposed Test Pit and Monitoring Well Location Map
Terms and Conditions - (HCH 1/99) with Exhibit A
Rate Schedule (HCFY00)
Contract Change form

ACCEPTED FOR POTLATCH CORPORATION BY:

Norm Linton *April 19, 2000*
Signature Date

Norm Linton / Area Manager
Name/Title - Please Print

Proposed Test Pit and Monitoring Well Location Map



TERMS AND CONDITIONS

1. SERVICES TO BE PROVIDED AND STANDARD OF CARE. HART CROWSER, INC. (hereinafter "HART CROWSER"), agrees to provide CLIENT (as identified in attached proposal), for its sole benefit and exclusive use, consulting services set forth in the proposal. HART CROWSER's offer to perform shall terminate if not accepted within 120 days of the date of the proposal. HART CROWSER's services shall be performed in accordance with the standard of care of its profession, which means generally accepted professional practices, in the same or similar localities, related to the nature of the work accomplished, at the time the services are performed. **HART CROWSER MAKES NO EXPRESS OR IMPLIED WARRANTIES REGARDING ITS SERVICES**, including, but not limited to, the implied warranties of merchantability and/or fitness for a particular purpose. Both parties agree that no third-party beneficiaries are intended by this AGREEMENT, which is defined to include these Terms and Conditions, the attached proposal, and attachments referenced in the proposal.

2. PAYMENT. HART CROWSER will submit invoices to CLIENT for the preceding month's services, and a final bill upon completion of services rendered according to the AGREEMENT. Invoices will be in a format consistent with the attached example marked Exhibit A. Payment is due within 30 days of the invoice date, unless CLIENT notifies HART CROWSER in writing, within 10 business days of the invoice date, of any dispute with the invoice. CLIENT and HART CROWSER will in good faith attempt to promptly resolve any disputed invoice amounts. All undisputed invoice amounts will be considered delinquent if not received by HART CROWSER within 30 days after the invoice date. Any action, claim, lien, or legal disputes arising from such delinquent amounts and initiated by HART CROWSER are not subject to the requirements set forth in paragraph 14 of this AGREEMENT. Interest will be added to delinquent amounts at the rate of one and one-half percent (1.5%) per month of the total arrearage, or the maximum rate allowed by law. Payments received for delinquent amounts will be applied first against interest and then against principal. HART CROWSER may suspend or terminate services under this AGREEMENT for CLIENT's failure to make timely payments after tendering seven (7) days written notice to CLIENT, and all reasonable demobilization and other suspension costs will be paid by CLIENT. Failure to make payment within the time limits set forth in this paragraph is a material breach and excuses HART CROWSER from any performance under this AGREEMENT. CLIENT shall pay HART CROWSER for all time spent and all costs, expenses, and fees incurred (including attorney's fees) in connection with perfecting liens or collecting any delinquent amount(s).

3. RIGHT OF ENTRY, PROPERTY RESPONSIBILITY, AND HAZARDOUS SUBSTANCES OR CONDITIONS. CLIENT shall provide HART CROWSER legal access to and/or obtain permission for HART CROWSER to enter upon all property, whether or not owned by CLIENT, as required by HART CROWSER to perform and complete its services. CLIENT warrants that, prior to HART CROWSER beginning the work, it will provide HART CROWSER with all information known or which should reasonably be known by CLIENT concerning the past or present use of the property, including the nature and existence of any hazardous substances, or hazardous or ultrahazardous conditions on, in, under, adjacent to, or near the property. HART CROWSER has responsibility for its own activities on the property including the safety of its employees; it does not assume control of, nor responsibility for, the property, the person in charge of the property, nor the safety or control of persons not in HART CROWSER's employ. CLIENT agrees that HART CROWSER has no responsibility as a handler, generator, operator, transporter, disposer, or arranger of the transportation and/or disposal of hazardous substances found or identified at the project property. CLIENT further agrees that it shall be responsible for arranging for the transportation and/or disposal of hazardous substances found or identified at the project property.

4. LIMITATION OF LIABILITY. CLIENT expressly agrees that to the fullest extent permitted by law, HART CROWSER's maximum liability to CLIENT for claims arising from HART CROWSER's professional acts, errors, or omissions, shall be the amount of HART CROWSER's fee for professional services or \$50,000, whichever is greater. In the event CLIENT desires a higher limitation of liability, HART CROWSER may increase this limit for a higher fee commensurate with the increased risk to HART CROWSER, and this paragraph will be amended by separate written agreement. As used in this paragraph, the term "liability" means liability of any kind, whether in contract (including breach of warranty), in tort (including negligence), in strict liability, or otherwise, for any and all injuries, claims, losses, expenses, or damages whatsoever arising out of or in any way related to HART CROWSER's services or the services of HART CROWSER's subcontractors, consultants, agents, officers, directors, and employees from any cause(s). HART CROWSER shall not be liable for any claims of loss of profits or any other indirect, incidental, or consequential damages of any nature whatsoever.

5. INDEMNIFICATION. CLIENT shall indemnify, defend, and hold harmless HART CROWSER and its subcontractors, consultants, agents, officers, directors, and employees from and against all claims, damages, losses, and expenses, including but not limited to attorney's fees and court costs arising out of or in any way related to the services or work of HART CROWSER, HART CROWSER's presence on the project property, or the presence, release, or threatened release of asbestos, hazardous substances, or pollutants on or from the project property; **provided that such indemnification shall not apply to such claims, damages, losses, or expenses that arise out of bodily injury to persons or damage to property to the extent they are caused by HART CROWSER's sole negligence or willful misconduct; and provided further that CLIENT shall indemnify HART CROWSER against liability for damages, losses, or expenses arising out of bodily injury to persons or damage to property and caused by or resulting from the concurrent negligence of (a) CLIENT, its agents or employees and (b) HART CROWSER, its agents, subcontractors, or employees, only to the extent of CLIENT's negligence or the negligence of CLIENT's agents or employees.** To the fullest extent permitted by law, such indemnification shall apply regardless of the breach of contract, negligence, or strict liability of HART CROWSER.

CLIENT AND HART CROWSER AGREE THAT PARAGRAPHS 4 AND 5 OF THESE TERMS AND CONDITIONS WERE MUTUALLY NEGOTIATED AND THAT BUT FOR THE INCLUSION OF PARAGRAPHS 4 AND 5, HART CROWSER WOULD NOT HAVE ENTERED INTO THIS AGREEMENT OR HART CROWSER'S COMPENSATION UNDER THIS AGREEMENT WOULD BE HIGHER.

6. DISPOSAL OF SAMPLES, MATERIALS, OR EQUIPMENT, AND WELL ABANDONMENT. Any non-hazardous samples will be discarded 90 days after sampling unless different arrangements are agreed to in writing. Samples, materials, or equipment containing hazardous substances that are regulated under federal, state, or local environmental laws shall be returned to CLIENT at CLIENT's expense. Alternatively, CLIENT may request in writing, pay, arrange, and assume responsibility for the contaminated samples, materials, or equipment to be transported to a disposal site in compliance with all applicable laws; HART CROWSER will act as a bailee and will not be arranging for the transportation or disposal of the contaminated samples, materials, or equipment. Any wells installed as part of HART CROWSER's work may later need to be properly abandoned and recorded in accordance with applicable law. Unless expressly provided for in the proposal, proper well abandonment and recording, and associated costs, are not included in this AGREEMENT.

7. UNFORESEEN OCCURRENCES, SUBSURFACE RISKS, AND SITE DAMAGE. If any unforeseen conditions or occurrences are encountered which, in HART CROWSER's judgment, significantly affect or may affect the recommended scope of work, then HART CROWSER will notify CLIENT. After such notification, HART CROWSER will complete the original scope of work, if appropriate, or agree with CLIENT to modify the AGREEMENT, or terminate the AGREEMENT pursuant to Paragraph 10 if the parties are unable to reach agreement. CLIENT recognizes that special risks occur and "guarantees" cannot be expected whenever professional consulting services are applied to determine the composition or makeup of a site's subsurface or the existence or non-existence of particular man-made or natural subsurface conditions, features, or substances, including but not limited to hazardous substances. CLIENT has the duty to disclose to HART CROWSER any such known or suspected conditions, substances, or features in writing or by notation on plans or drawings provided by CLIENT. Even with adequate disclosure by CLIENT, HART CROWSER can only minimize these risks by applying the standard of care in the industry, and CLIENT agrees to accept this level of risk. When HART CROWSER is providing field services, CLIENT recognizes that the use of exploration and test equipment may unavoidably damage or alter the property surface or subsurface, and CLIENT agrees to assume responsibility for such unavoidable damages or alterations. Finally, CLIENT agrees to assume responsibility for (OVER)

personal and property damages caused by HART CROWSER's interference with subterranean structures, including but not limited to pipes, tanks, utility lines, passageways, tunnels, openings, or other such conditions, substances, or features that are not called to HART CROWSER's attention in writing or correctly shown on plans or drawings provided by CLIENT.

8. REPORTS, RECOMMENDATIONS, OWNERSHIP OF DOCUMENTS, AND ELECTRONIC DATA. Reports, recommendations, electronic data, and other materials resulting from HART CROWSER's efforts are intended solely for the CLIENT for the purposes of this AGREEMENT; any reuse by CLIENT or others for purposes outside of this AGREEMENT or any failure to follow HART CROWSER's recommendations, without HART CROWSER's written permission, shall be at the user's sole risk. CLIENT will furnish such reports, data, studies, plans, specifications, documents, and other information deemed necessary by HART CROWSER for proper performance of its services. HART CROWSER may rely upon CLIENT-provided documents in performing the services required under this AGREEMENT; however, HART CROWSER assumes no responsibility or liability for their accuracy. CLIENT-provided documents will remain property of CLIENT. All proposals, reports, field notes, calculations, estimates, electronic data, and other documents which are prepared, as instruments of service, shall remain HART CROWSER's property, and HART CROWSER shall retain copyrights to these materials. HART CROWSER will retain all pertinent records relating to services performed for a period of six years following completion of a report, during which period the records will be made available to CLIENT at all reasonable times. Because of the possibility that electronic information and data delivered in machine readable form may be altered, inadvertently or otherwise, HART CROWSER reserves the right to retain the original tapes and disks. HART CROWSER also reserves the right to retain hard copy originals of all project documentation delivered to the CLIENT in machine readable form, which originals shall be referred to and shall govern in the event of any inconsistency between the two. **HART CROWSER MAKES NO WARRANTIES REGARDING REPORTS, DOCUMENTS, OR ELECTRONIC DATA, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY AND/OR FITNESS FOR ANY PARTICULAR PURPOSE.**

9. FORCE MAJEURE. It shall be deemed that neither party to this AGREEMENT will be in default under the terms of this AGREEMENT if performance of services is suspended or is prevented or prohibited by law, by inability to obtain permits or licenses, by scarcity or inability to obtain equipment, material, power, fuel, data, or information from parties not under the express control of HART CROWSER, by strike, lockout, or industrial disturbance, by failure of carriers to transport or furnish facilities for transportation, by operation of force majeure (including, without limitation, fire, lightning, earthquake, storm, eruption, flood, washout, cave-in, slides), breakage, or accident to machinery or facilities, or by any cause or action of third parties beyond HART CROWSER's control; provided, however, that HART CROWSER shall exercise reasonable diligence to resume services.

10. TERMINATION. This AGREEMENT may be terminated by either party upon receipt of written notice for (1) convenience, or for (2) substantial or material failure to perform in accordance with terms hereof through no fault of the terminating party. Except for termination arising out of delinquency in payment for HART CROWSER's services, such termination shall not be effective unless: (i) not less than seven (7) calendar days notice of intent to terminate has been provided; (ii) the notice specifies "for convenience" or the nature of the substantial or material failure; and (iii) the notified party has had an opportunity to consult with the terminating party to discuss the termination "for convenience" or cure the substantial failure before expiration of the period specified in the written notice, which shall not be less than seven (7) calendar days. In the event of termination, HART CROWSER shall be paid for services performed up to the termination date, and reasonable termination expenses, including all direct costs and all expenses incurred or committed to that cannot be canceled without penalty. If CLIENT terminates for convenience, a termination charge of 5 percent of HART CROWSER's total fee earned to date or \$500, whichever is greater, will be immediately due and payable, in addition to the above costs.

11. CERTIFICATION. HART CROWSER shall not be required to execute any certification with regard to work or services performed, tested, or observed under this AGREEMENT unless: i) HART CROWSER believes that sufficient work has been performed by HART CROWSER to provide an adequate basis to issue the certification; ii) HART CROWSER believes that the work performed, tested, or observed meets the criteria of the certification; and iii) the form of such certification has been approved by HART CROWSER, in writing, prior to execution of this AGREEMENT. Unless expressly provided for otherwise in writing by HART CROWSER, a certification fee of \$1,500 will be due and payable for the first certification HART CROWSER has agreed to perform on this project and \$750 for each additional certification.

12. SEVERABILITY AND SURVIVAL. Any element of this AGREEMENT later held to violate a law shall be deemed void, and all remaining provisions shall continue in force. All Terms and Conditions of this AGREEMENT allocating liability between CLIENT and HART CROWSER, including in particular Paragraphs 4 and 5, shall survive the completion of the services and the termination of this AGREEMENT.

13. INTERPRETATIONS AND TIME BAR TO LEGAL ACTION. Interpretations and enforcement of this AGREEMENT shall be governed by the laws of the State of Washington. All legal actions of any kind by either party against the other related to this AGREEMENT (except actions for non-payment), shall be barred after one year has passed from the time the claimant knew or should have known of its claim, and under no circumstances shall be initiated after two years have passed from the date by which HART CROWSER completes its services.

14. DISPUTES RESOLUTION. Except as provided in the provisions for Payment, Paragraph 2, in the event of any dispute, claim, cause of action, or other disagreement arising from or relating to this AGREEMENT, the parties shall in good faith use their best efforts to settle such dispute, claim, cause of action, question, or disagreement. If they do not reach a settlement within 60 days, then the parties agree to submit the dispute to mediation, before resorting to litigation. If a dispute at law arises related to the services provided under this AGREEMENT, and such dispute cannot be resolved by negotiation or mediation, then: (i) CLIENT assents to personal jurisdiction in the State of Washington; (ii) The claim will be brought and tried in either the federal or state jurisdiction in the county where HART CROWSER's principal place of business is located and CLIENT waives the right to transfer the action to any other county or judicial jurisdiction; and (iii) The prevailing party will be entitled to recovery of all reasonable costs incurred, including staff time, court costs, attorneys' fees, and other claim-related expenses.

15. PRECEDENCE AND ENTIRE AGREEMENT. These Terms and Conditions shall take precedence over any inconsistent or contradictory provisions, oral or written, contained in any proposal, contract, purchase order, requisition, notice to proceed, or like document regarding HART CROWSER's services. CLIENT and HART CROWSER agree that all provisions of these Terms and Conditions were mutually negotiated and agreed upon, and that this AGREEMENT represents the entire AGREEMENT between the parties. No modification or alteration of any provision of this AGREEMENT shall be binding upon either CLIENT or HART CROWSER, unless such modification or alteration is mutually agreed to, is in writing, and is signed by the party against whom such modification or alteration is sought to be enforced.

16. MISCELLANEOUS PROVISIONS. This AGREEMENT shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns. Performance of this AGREEMENT may not be assigned by either party without the express written consent of the other, and CLIENT shall not assign any of its legal remedies or courses of action arising from or relating to HART CROWSER's performance of or breach of this AGREEMENT without the express written consent of HART CROWSER. No waiver of any right or remedy in respect of any occurrence on occasion shall be deemed a waiver of such right or remedy in respect of such occurrence on any other occasion. CLIENT and HART CROWSER acknowledge that they have had the opportunity to have this AGREEMENT and all matters related thereto, reviewed by their legal counsel.



Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, Washington 98102-3699
206.324.9530

INVOICE NO: XXXXXX

DATE: XX/XX/XX

JOB NO: XXXXXX

Client Name
Client Address Line 1
Client Address Line 2
Client Address Line 3
Client Address Line 4

ATTENTION: Client Contact

Project Description Line 1
Project Description Line 2
Project Description Line 3
Project Description Line 4

REF NO: Client P.O. No.

PROFESSIONAL SERVICES - XX/XX/XX through XX/XX/XX

DIRECT LABOR

XXX,XXX.XX

DIRECT EXPENSES

XXX,XXX.XX

AMOUNT DUE THIS INVOICE

X,XXX,XXX.XX

EXAMPLE

Total Authorized	\$ X,XXX,XXX.XX
Invoiced to Date	\$ X,XXX,XXX.XX

Balance Remaining	\$ X,XXX,XXX.XX

RATE SCHEDULE INVOICE

Please pay from this invoice
Terms: Payment due upon receipt

Exhibit A
Sheet 1 of 2

K 00042



HARTCROWSER

Earth and Environmental Technologies

Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, Washington 98102-3699
206.324.9530

INVOICE NO: XXXXXX

DATE: XX/XX/XX

JOB NO: XXXXXX

LABOR & EXPENSE DETAIL

DIRECT LABOR	HOURS	RATE	AMOUNT
Senior Staff			
HCI Employee	XXX.XX	XXX.XXXX	XX,XXX.XX
HCI Employee	XXX.XX	XXX.XXXX	XX,XXX.XX
Project			
HCI Employee	XXX.XX	XXX.XXXX	XX,XXX.XX
Clerical			
HCI Employee	XXX.XX	XXX.XXXX	XX,XXX.XX
Proj. Assistant/Technical Word Proc			
HCI Employee	XXX.XX	XXX.XXXX	XX,XXX.XX
Project Drafter			
HCI Employee	XXX.XX	XXX.XXXX	XX,XXX.XX
	-----		-----
	XXX.XX		XXX,XXX.XX

DIRECT EXPENSES

	COST/QTY	RATE	AMOUNT
HCI Unit Pricing Reimbursable			
In-House Reprographics			
DOC ID XX/XX/XX	XX.XX copy(s)		
I/H Repro 8 1/2 x 11 (14)			
DOC ID XX/XX/XX	XX.XX copy(s)		
I/H Repro 8 1/2 x 11 (14)			

***	XX.XX	XX.XXXX	XX,XXX.XX
Computer Charges/Word Pr			
DOC ID XX/XX/XX	XX.XX hour(s)		
Word Processing Comp Rental			

	XX.XX	XX.XXXX	XX,XXX.XX
Personal Mileage Reimbur			
DOC ID XX/XX/XX	XX.XX mile(s)		
Mileage - Personal Vehicle			

	XX.XX	.XXXX	XX,XXX.XX

			XXX,XXX.XX
** TOTAL PROJECT			X,XXX,XXX.XX

Please pay from this invoice

Terms: Payment due upon receipt

Exhibit A
Sheet 2 of 2

K 00043



HARTCROWSER
Delivering smarter solutions

www.hartcrowser.com

HART CROWSER RATE SCHEDULE

Anchorage

Sr. Principal	\$165
Principal	\$150
Sr. Associate	\$135
Associate	\$120
Sr. Project	\$105
Project	\$ 95
Sr. Staff	\$ 80
Staff	\$ 65
Technician	\$ 50
Sr. Drafter	\$ 70
Drafter	\$ 55
Project Assistant/Technical Word Processor	\$ 50

Boston

Chicago

Denver

Fairbanks

Jersey City

Juneau

DIRECT CHARGES

Auto Mileage	\$0.325/mile
Truck/Van Rental (Half-day minimum)	\$70.00/day
Subcontractors and Outside Vendors	Cost + 15%
Communication Charge	5% of Billed Labor
Safety Program for Potentially Dangerous/Hazardous Material	\$5.00/field labor hour

Long Beach

The current Schedule of Laboratory and Field Charges for in-house laboratory services and field equipment rental and supplies is available upon request. All rates are subject to change without notice.

HCFY00

Portland

Seattle

1910 Fairview Avenue East
Seattle, Washington 98102-3699
Fax 206.328.5581
Tel 206.324.9530

K 00044



HARTCROWSER

Contract Change

CHANGE NO. _____

DATE _____

CLIENT _____

JOB. NO. _____

PROJECT _____

DESCRIPTION OF CHANGE

COST

EXAMPLE

This change amends contract between Hart Crowser and Client dated _____. Except as amended above, all terms and conditions of contract apply to this contract change.

CLIENT

BY _____

PRINTED NAME _____

HART CROWSER, INC.

BY _____

PRINTED NAME _____



HARTCROWSER

Delivering smarter solutions

www.hartcrowser.com

April 24, 2000

Anchorage

Mr. Norm Linton
Area Manager
Potlatch Corporation
1100 Railroad Avenue
P.O. Box 386
St. Maries, Idaho 83861

Boston

Chicago

Re: Site Characterization Plan
Avery Landing Site
Avery, Idaho
J-2296-07

Denver

Dear Mr. Linton:

This letter report presents our Site Characterization Plan (SCP) for field investigation and free product delineation at the Avery Landing Site.

Fairbanks

The objective of this work is to determine the extent of the free product on the site, provide monitoring wells to track the status of the free product, and provide a basis of design for the containment wall that will be part of the Avery Landing Site Corrective Action Plan.

Jersey City

METHODOLOGY FOR SITE WORK

To determine the extent of the free product, we will excavate test pits to observe subsurface conditions around the site. This method will allow us to visually determine and document the edge of the free product plume. Based on our experience at the site, we expect that the plume edge will be defined by the presence, or lack thereof, of black, oil-saturated soils. We feel this approach will be more accurate, and faster than installing monitoring wells using conventional drilling methods for determining the extent of free product on the site. If wells are installed using conventional drilling methods to determine the extent of product, the actual edge of the plume will have to be estimated using the depth of product in the well and an estimated slope of the product. Furthermore, the depth of product in a well can exaggerate the actual in situ depth of free product by a factor of 3, leading to an exaggerated plume extent.

Juneau

Long Beach

Portland

Seattle

1910 Fairview Avenue East
Seattle, Washington 98102-3699
Fax 206.328.5581
Tel 206.324.9530

K 00046



The secondary purpose of the monitoring wells is to monitor any changes in the free product plume. Another reason the project does not require installation of a drinking water-type monitoring well is because the only data that will be collected is water depth and product thickness. Therefore, we propose to install well screens in the test pit excavations created while determining the extent of the free product plume. By completing test pits inside of the free product area first and allowing free product to accumulate in these test pits for 3 days, we can get a more accurate estimate of actual depth of product. This is because the capillary action, thought to cause most of the product depth exaggeration in a well, is significantly reduced in a larger exposed area. Finally, by using the relatively accurate location of the product plume edge, we can strategically place, inside the plume area for upgradient wells and outside of the plume area for downgradient wells, the new wells to help determine the speed at which the plume edge is traveling.

The information collected during the test pit excavation will be used to prepare a Site Characterization Report (SCR) and Corrective Action Plan (CAP). Data obtained from the explorations will be used to determine the length, depth, and shape of the containment wall. Using the estimated product volume and extent, a mass balance model will be developed to show that the containment wall with periodic free product removal would not allow free product to escape the site. The actual slope of the wall and thicknesses of the materials being placed would be determined by Potlatch during construction, based on constructability criteria.

SCOPE OF WORK

Using an excavator, we will create up to ten 20- to 60-foot-long observation test pits at the proposed locations shown on Figure 1. Provided free product is encountered, Test Pits 1 and 2 will be used as free product pits and left open for the duration of the exploration work, approximately 3 days. Each additional test pit will be extended until a plume edge is encountered and documented. Excavated material will be used as backfill in the trenches using the excavator bucket for compaction.

Well casing will be installed in the observation trenches during the backfilling process. Two-inch-diameter slotted pipe finished at least 3 feet above grade will be used for the well completion. The wells will be less than 18 feet in depth below grade. In the upgradient test pits, the wells will be completed inside of the free product plume area. In downgradient test pits, the wells will be completed outside of the plume area. Clean soil from the test pit excavation will be used for the backfill around the downgradient wells.



Table 1 - Proposal Schedule

Activity	Schedule
Comments/Approval received from IDEQ	May 31, 2000
Test pit and well installation	Week of June 12, 2000
Submit SCR and CAP	July 14, 2000
Approval of SCR and CAP required from IDEQ	August 14, 2000
Begin Corrective Action and stream-bank rehabilitation	Week of September 11, 2000, or after IDEQ has approved CAP.

The Project schedule is detailed in Table 1. Based on a normal years' water runoff, the construction should be completed in September. Every effort will be made to accelerate the work if The Idaho Department of Environmental Quality (IDEQ) approves our plan before their due date, to accommodate a September 11, 2000, construction start date.

LIMITATIONS

Work for this project was performed, and this letter report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of Potlatch Corporation for specific application to the referenced property. This report is not meant to represent a legal opinion. No other warranty, express or implied, is made.

Any questions regarding our work and this letter report, the presentation of the information, and the interpretation of the data are welcome and should be referred to the undersigned.



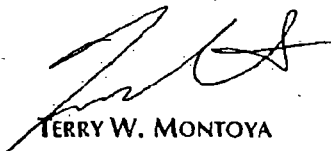
Potlatch Corporation
April 24, 2000

J-2296-07
Page 4


We trust that this report meets your needs.

Sincerely,

HART CROWSER, INC.



TERRY W. MONTOYA
Senior Project Engineer



MATTHEW F. SCHULTZ, P.E.
Associate Chemical Engineer

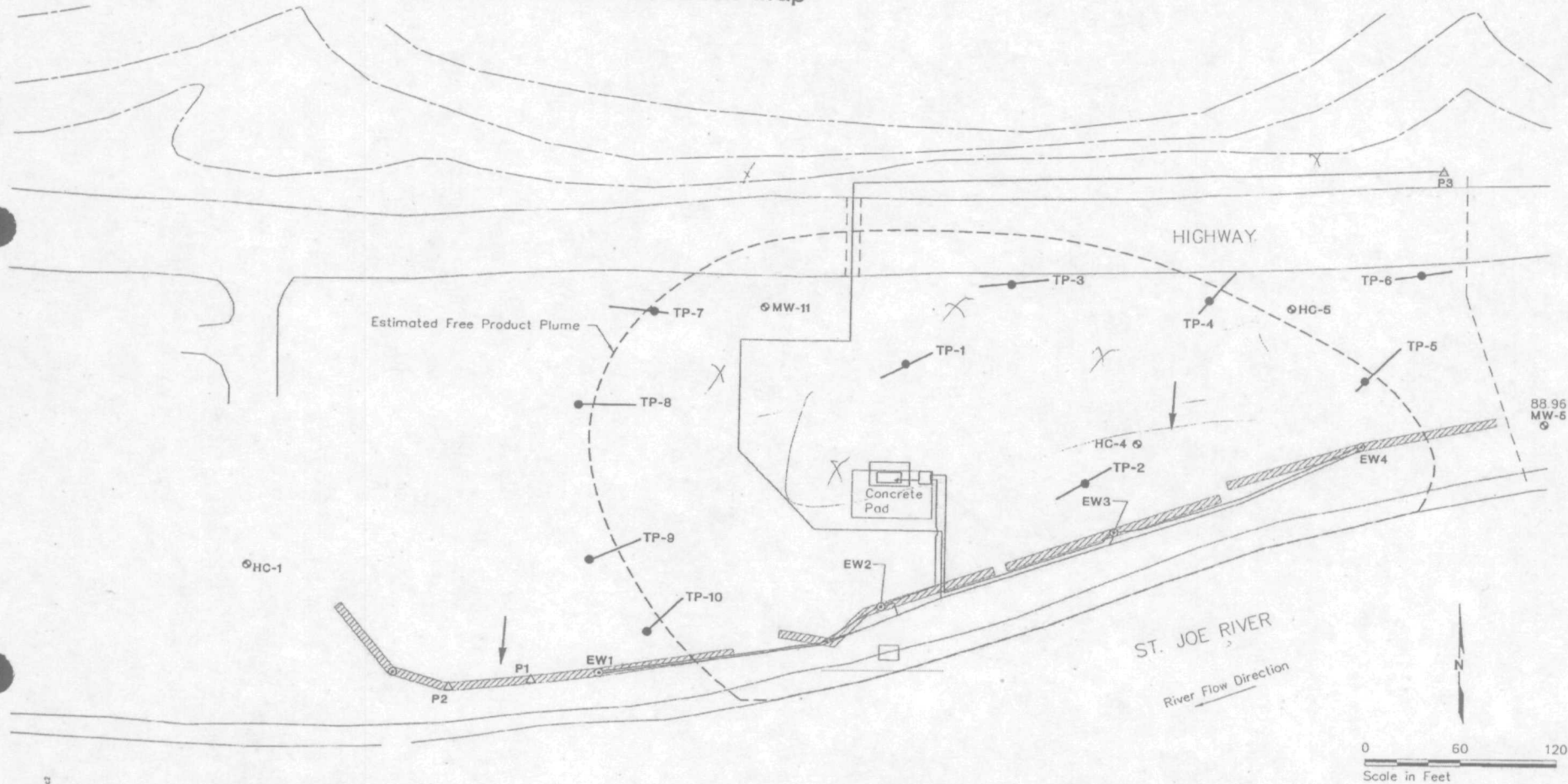
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Attachments:

Figure 1 - Proposed Test Pit and Monitoring Well Location Map

cc: Gregory Rapp, Construction Service Manager, Potlatch Corporation

Proposed Test Pit and Monitoring Well Location Map



Exploration Location and Number

- ⊙ MW-4 Monitoring Well
- ⊙ EW1 Extraction Well
- Δ P1 Piezometer
- ⊙ HC-5 Lost During Construction (1997)

- ← Approximate Groundwater Flow Direction
- ▨ Existing Extraction Trench

- TP-1 Proposed Test Pit Location and Number
- Proposed Monitoring Well Location

HARTCROWSER
J-2296-07 4/00
Figure 1



STATE OF IDAHO
DIVISION OF
ENVIRONMENTAL QUALITY

xc: mike mcallister
John Emery
Greg Rapp
orig: Norm

F.X.I

2110 Ironwood Parkway • Coeur d'Alene, Idaho 83814-2848 • (208) 769-1422

Dirk Kempthorne, Governor
C. Stephen Alfred, Administrator

May 1, 2000

Norm Linton, Area Manager
Potlatch Corporation
P.O. Box 386
St. Maries, ID. 83861-0386

Dear Mr. Linton:

Enclosed is the final Consent Order Modification Avery Landing, dated April 27, 2000. Thank you for your cooperation in getting this document finalized. Although the stream bank alteration will be a part of the state and federal permitting process and will also be defined in the Corrective Action Plan, please be aware that specific plans will be required to address impacts to surface water during construction activities in this area.

I look forward to working with you on this project and helping to bring about it s successful conclusion this year. Please call or e-mail me with any questions.

Sincerely,

Kreg Beck
Remediation Project Specialist

Enclosure

c: Greg Weigel, EPA, 1435 N. Orchard, Boise, ID, 83706

**CONSENT ORDER MODIFICATION
AVERY LANDING**

Paragraph 4.D. (7) of the August 18, 1994 Consent Order between the Division of Environmental Quality (DEQ) and Potlatch Corporation regarding the remediation of the Avery Landing site is modified as follows:

4.D. (8) In accordance with Section 4.D. (7), and through mutual consent of DEQ and Potlatch, the following changes to the Remediation Plan (Plan) are hereby incorporated:

The initial changes to the Plan shall include a Site Characterization (SC) and stream bank rehabilitation. Depending on the results of the SC, additional remedial activities will likely be needed. These may include removal of pockets of significant contamination, a mechanism to immobilize the remaining contaminants, and ~~for a~~ ^{for a} containment structure to isolate remaining contaminants. Due to the technical nature of the proposed strategies, DEQ suggests that Potlatch hire a reputable contractor to perform the SC design and implement the remedial actions. K5
M.D.

Potlatch shall propose technical details and time lines for implementing a Site Characterization Plan (SCP) to be submitted to DEQ no later than April 30, 2000. DEQ shall approve or ask for changes to the SCP within 30 days of receipt, however, the SCP must meet DEQ's approval within 60 days of the due date of the first submittal. The SCP must provide sufficient information on hydro geologic conditions, vertical and horizontal extent of contamination in the ground water, representative concentrations of petroleum Constituents of Concern in site soils, site stratigraphy, and characteristics of the petroleum on site to support your selected remediation alternatives.

Within 30 days of the completion of the SC, Potlatch shall submit a Site Characterization Report (SCR) and Corrective Action Plan (CAP) that includes the technical details and time lines for stream bank rehabilitation and other proposed remedial activities warranted as a result of the site characterization. DEQ shall approve or ask for changes to the SCR/CAP within 30 days of receipt, however, the SCR/CAP must meet DEQ's approval within 60 days of the due date of the first submittal. The CAP shall include a summary of permits and agreement needed for stream bank rehabilitation and work done on adjacent properties, specific plans for soil removal and disposal, proposal of types of material to be used in a stream bank barrier, a sampling and analysis plan, and sufficient background data to support additional remedial actions or the reason additional remedial actions are not required. Until a new work plan is approved, the original work plan should continue to be implemented.

Potlatch

Potlatch Corporation
Resource Management Group
Idaho Region

St. Joe Area Woodlands
P.O. Box 386
St. Maries, Idaho 83861-0386
Telephone (208) 245-4146
Fax (208) 245-6421

June 12, 2000

Kreg Beck
State of Idaho
Division of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene ID 83814

RE: Site Characterization Plan - Avery Landing

Dear Kreg,

This letter is in response to your four (4) concerns to our site characterization plan (SCP) that was submitted on April 28, 2000.

Concern #1 - Prior to test pits being filled in, if a recoverable sheen of petroleum is observed on ground water, the petroleum should be extracted off the ground water with absorbents or vacuuming prior to backfilling.

Comments: Agree with this concern providing enough petroleum is observed to warrant extraction and the extraction can be conducted safely.

Concern #2 - If a zone of heavily petroleum contaminated soils is encountered while digging test pits, this material should be separated from the clean soils and taken to the same land treatment area as the one being proposed for contaminated soils from the stream bank excavation.

Comments: Agree with this concern and will place contaminated soils in treatment area.

Concern #3 - You may want to consider installing larger diameter wells if this would significantly improve the capillary problem and lead to more accurate measurements of product thickness.

Comments: Agree with this concern and plan to install 4 inch diameter monitoring wells.

Concern #4 - You may also want to consider the application of biological enzymes and nutrients at the time these pits are open, as this type of treatment may accelerate the shrinkage of the plume.

Comments: Based on our consultants recommendation we do not plan to apply biological enzymes and nutrients during the sit characterization field work.

If you have any questions or comments about the site characterization, feel free to call me at my St. Maries office at (208) 245-6425.

Sincerely,



Norm Linton
Area Manager

XC: Mike McAllister
John Emery
Greg Rapp
Terry Montoya - Hartcrowser

JOINT APPLICATION FOR PERMIT
U.S. ARMY CORPS OF ENGINEERS
IDAHO DEPARTMENT OF WATER RESOURCES
IDAHO DEPARTMENT OF LANDS

SEPARATE PERMIT DECISIONS MUST
BE RECEIVED FROM BOTH THE STATE
OF IDAHO AND THE CORPS OF ENGINEERS
PRIOR TO START OF WORK

The Department of the Army permit program is authorized by Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act. These require permits authorizing structures and work in or affecting navigable waters of the United States and the discharge of dredged or fill material into waters of the United States, including their adjacent wetlands. State permits are required under the State of Idaho, Stream Channel Protection Act (Title 42, Chapter 38, Idaho Code) and the Idaho Lake Protection Act, Section 58-142 et. seq. Idaho Code. This application will meet the requirements of the above agencies.

1. Corps of Engineers # _____ Date Received _____	2. State of Idaho # <u>91-S-262</u> Date Received <u>6/2/00</u> \$20 Rec'd By: <u>db</u> Receipt # <u>N013710</u>
--	---

PLEASE TYPE OR PRINT

3. Applicant <u>Potlatch Corporation</u> Mailing Address <u>P.O. Box 386</u> <u>St. Maries, ID 83861-0386</u> Work Phone (Area) <u>(208) 245-4146</u> Home (Area) <u>(208) 245-4661</u> Fax Number <u>(208) 245-6421</u>	4. Authorized Agent _____ Mailing Address _____ Work Phone (Area) _____ Home (Area) _____ Tributary of: <u>Coeur d' Alene Lake</u> Assessor's Desc. (Tax No. or Subdivision, Lot & Block No.) _____ * (See instruction) NW, NW Sec. <u>15</u> T45N R5E NE, NE Sec. <u>16</u> 1/4 1/4 Section Township Range UTM Coordinate Grid _____ Zone _____ Northing _____ Easting _____
--	---

5. Location where proposed activity exists or will occur.
Waterway St. Joe River
1/2 Mi. West of Avery Shoshone ID
In/near city or town County State
83802 Shoshone County
Zip Code Local jurisdiction (city or county)

6. Describe the proposed activity. Provide a general description of the proposed work including all discharges of fill material and any structures such as piers, float boat lifts, bulkheads, and cofferdams.

Excavate and endhaul contaminated material from the riverbank for approximately 800 feet.

An impervious liner will be installed on native soil and clean backfill placed on the liner to hold it in place. Clean 24" minus rip-rap will be machine placed 3 feet in depth on the riverbank.

Describe construction methods and equipment:

Riverbank excavation, embankment placement and rip-rap will be constructed with a large hydraulic excavator.

List all soil series located at project site, and indicate if any are on the county's hydric soils list:

N/A

Length of project along the stream or extension into lake or reservoir: 800'

Will material be placed waterward of ordinary high water mark? Yes If yes, volume: 6,000 (cubic yards)
(BOTH TEMPORARY AND PERMANENT)

Will material be placed in wetlands? No If yes, total area: _____ (acres)

Type and composition of fill material: native soil & rip-rap (i.e. sand, etc.) Material Source: local Quarry

Will excavation or dredging be required? Yes If yes, volume: 9,000 (cubic yards) Composition river rock & concrete chunk

Disposal site for excavated material: on-site/upland Method of excavation: hydraulic excavator

Stream gradient: 1%

Method of controlling turbidity and/or sedimentation: construct during summer low flows (September) and construct cofferdams/silt barriers as needed to minimize turbidity.

7. Size and flow capacity of proposed bridge or culvert and area of drainage served (sq. miles): (Idaho Department of Water Resources requirement.)

N/A

Preparation of drawings. One set of original or good quality reproducible drawings must be attached to this application. NOTE: DRAWINGS NO LARGER THAN 8-1/2 X 11 INCHES IN SIZE. See the instruction pamphlet for instructions and a checklist for completing the drawings. Include photographs of the project site mounted on 8-1/2 x 11 sheets.

Purpose and intended use: Commercial ☒ Public ☐ Private ☒ Other ☐ Describe Streambank Rehabilitation

Necessity and justification for project The existing petroleum product recovery system is not mitigating the discharge of petroleum into the St. Joe River.

Proposed Starting Date September 11, 2000 Estimated Duration 2 Weeks

If any portion of the activity is complete, indicate month and year of completion N/A
Indicate the existing work on the drawings.

Names, addresses, and telephone numbers of adjoining property owners, lessees, etc., whose property also adjoins the waterway.

<u>Lawrence Bentcik</u>	<u>U.S. Forest Service</u>
<u>Rt. 1 Box 269</u>	<u>P.O. Box 407</u>
<u>St. Maries, Idaho 83861</u>	<u>St. Maries, Idaho 83861</u>

☐ Check here if the alteration is located on endowment lands administered by the Idaho Department of Lands

LEGAL OWNER IF OTHER THAN APPLICANT NOTE: The area requested in this permit is owned by Potlatch Corporation and Lawrence Bentcik.

Mailing Address	<u>Rt. 1 Box 269</u>	City, State, Zip Code	<u>St. Maries, Idaho 83861</u>
Phone	Area <u>Work (208) 245-4502</u>	Area <u>Home (208) 245-3393</u>	

List other applications, approvals, or certifications from other Federal, interstate, state, or local agencies for any structures, constructions, discharges, deposits, or other activities described in the application.

Issuing Agency	Type of Approval	Identification No.	Date of Application	Date of Approval
<u>State of Idaho DEQ</u>	<u>Consent Order</u>	<u>N/A</u>	<u>N/A</u>	<u>8/18/94</u>
<u>State of Idaho DEQ</u>	<u>Consent Order mod.</u>	<u>N/A</u>	<u>N/A</u>	<u>4/27/00</u>

Has any agency denied approval for the activity described herein or for any activity directly related to the activity described herein? Yes ☐ No ☒ (If "Yes" explain)

Remarks or additional information:

Application is hereby made for a permit or permits to authorize the activities described herein. I certify that I am familiar with the information contained in this application, and that to the best of my knowledge and belief, such information is true, complete, and accurate. I further certify that I possess the authority to undertake the proposed activities. I hereby grant to the agencies to which this application is made, the right to come upon the above-described location to inspect the proposed or completed work.

June 1, 2000
Date

Norm Linton Area Manager Potlatch Corp.
Signature of Applicant (ORIGINAL SIGNATURE REQUIRED)

If an authorized agent is to be designated, Item 4 and the following information should be completed.

I hereby designate _____ to act as my agent in matters related to this permit application. I understand that if a Federal permit is issued, I must sign the permit.

Date _____ Original Signature of Authorized Agent _____ Original Signature of Applicant _____

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly falsifies, conceals, or covers up by any trick, scheme, or device a material fact or makes any false, fictitious, or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious, or fraudulent statement or entry, shall be fined not more than \$10,000 or imprisoned not more than 5 years or both. Do not send a Federal permit processing fee with this application. The appropriate fee will be assessed when a permit is issued.

DO NOT SEND FEDERAL PROCESSING FEE WITH APPLICATION

056. CONSTRUCTION PROCEDURES (Rule 56).

01. Conformance to Procedures. Construction shall be done in accordance with the following procedures unless specific approval of other procedures has been given by the Director. When an applicant desires to proceed in a manner different from the following, such procedures should be described on the application.

02. Operation of Construction Equipment. No construction equipment shall be operated below the existing water surface without specific approval from the Director except as follows: Fording the stream at one location only will be permitted unless otherwise specified; however, vehicles and equipment will not be permitted to push or pull material along the streambed below the existing water level. Work below the water which is essential for preparation of culvert bedding or approved footing installations shall be permitted to the extent that it does not create unnecessary turbidity or stream channel disturbance. Frequent fording will not be permitted in areas where extensive turbidity will be created.

03. Temporary Structures. Any temporary crossings, bridge supports, cofferdams, or other structures that will be needed during the period of construction shall be designed to handle high flows that could be anticipated during the construction period. All structures shall be completely removed from the stream channel at the conclusion of construction and the area shall be restored to a natural appearance.

04. Minimizing Disturbance of Area. Care shall be taken to cause only the minimum necessary disturbance to the natural appearance of the area. Streambank vegetation shall be protected except where its removal is absolutely necessary for completion of the work adjacent to the stream channel.

05. Disposal of Removed Materials. Any vegetation, debris, or other material removed during construction shall be disposed of at some location out of the stream channel where it cannot reenter the channel during high stream flows.

06. New Cut of Fill Slopes. All new cut or fill slopes that will not be protected with some form of riprap shall be seeded with grass and planted with native vegetation to prevent erosion.

07. Fill Material. All fill material shall be placed and compacted in horizontal lifts except as provided for in Rule 55.05.e. for uncompacted dike and levee construction. Areas to be filled shall be cleared of all vegetation, debris and other materials that would be objectionable in the fill.

08. Limitations on Construction Period. The Director may limit the period of construction as needed to minimize conflicts with fish migration and spawning, recreation use, and other uses.

057. DUMPED ROCK RIPRAP (Rule 57).

01. Placement of Riprap. Riprap shall be placed on a granular bedding material or a compact and stable embankment.

02. Sideslopes of Riprap. Sideslopes of riprap shall not be steeper than 2:1 (2' horizontal to 1' vertical) except at ends of culverts and at bridge approaches where a 1½:1 sideslope is standard.

03. Minimum Thickness of Riprap. The minimum thickness of the riprap layer shall equal the dimension of the largest size riprap rock used or be 18 inches, whichever is greater. When riprap will be placed below high water level, the thickness of the layer shall be 50 percent greater than specified below.

04. Riprap Protection. Riprap protection must extend at least one foot above the anticipated high water surface elevation in the stream.

05. Rock Used for Riprap. Rock for riprap shall consist of sound, dense, durable, angular rock fragments, resistant to weathering and free from large quantities of soil, shale, and organic matter. The length of a rock shall not be more than three times its width or thickness. Rounded cobbles, boulders, and streambed gravels are not acceptable as dumped riprap.

06. Size and Gradation of Riprap. Riprap size and gradation are commonly determined in terms of the weight of riprap rock. The average size of riprap rock shall be at least as large as the maximum size rock that the stream is capable of moving. The maximum size of riprap rock used shall be 2 to 5 times larger than the average size.

07. Methods Used for Determining Gradation of Riprap. There are many methods used for determining the gradation of riprap rock. One of these many acceptable methods is shown in Table 1 and Figure 1. A second method is the Far West States (FWS) method shown in Table 1A in Appendix II.

Table 1
Gradation of Riprap in Pounds

Max. Weight of Stone Required (lbs.)	Min. and Max. Range in Weight of Stones (lbs.)	Weight Range 75 percent of Stones (lbs.)
150	25 - 150	50 - 150
200	25 - 200	50 - 200
250	25 - 250	50 - 250
400	25 - 400	100 - 400
600	25 - 600	150 - 600
800	25 - 800	200 - 800
1000	50 - 1000	250 - 1000
1300	50 - 1300	325 - 1300
1600	50 - 1600	400 - 1600
2000	75 - 2000	600 - 2000
2700	100 - 2700	800 - 2700

08. Use of Filler Material. A blanket of granular filter material or filter fabric shall be placed between the riprap layer and the bank in all cases where the bank is composed of erodible material that may be washed out from between the riprap rock. Filter material shall consist of a layer of well-graded gravel and coarse sand at least six inches thick.

09. Toe Protection. Some suitable form of toe protection shall be provided for riprap located on erodible streambed material.

a. Various acceptable methods of providing toe protection are shown in Figure 2 in Appendix III. (Or see "Forms, Appendices, Charts, Graphs, Etc..." Idaho Administrative Bulletin, July 1, 1993, Volume 93-1, Page 37-185).

b. In addition to the approved methods of providing toe protection as shown in Figure 2 in Appendix III (Or see "Forms, Appendices, Charts, Graphs, Etc..." Idaho Administrative Bulletin, July 1, 1993, Volume 93-1, Page 37-185). any other reasonable method will be considered by the Director during review of a proposed project.

10. Extension of Riprap Area. Riprap shall extend far enough upstream and downstream to reach stable areas, unless protected against undermining at ends by the method shown in Figure 3 in Appendix IV (Or see "Forms, Appendices, Charts, Graphs, Etc..." Idaho Administrative Bulletin, July 1, 1993, Volume 93-1,

Page 37-186). On extremely long riprap sections, it is recommended that similar cutoff sections be used at several intermediate points to reduce the hazard that would be created if failure of the riprap occurred at any one location.

11. Finished Surfaces. Placement shall result in a smooth, even finished surface. Compaction is not necessary.

12. Placement of Riprap. The full course thickness of the riprap shall be placed in one operation. Dumping riprap long distances down the bank or pushing it over the top of the bank with a dozer shall be avoided if possible. Material should be placed with a backhoe, loader, or dragline. Dumping material near its final position on the slope or dumping rock at the toe and bulldozing it up the slope is a very satisfactory method of placement, if approval is obtained for the use of equipment in the channel.

13. Design Procedure. Design procedure using the Far West States (FWS) method.

a. The FWS method uses a single equation to deal with variables for riprap.

$$D_{75} = \frac{3.5}{CK} \quad \text{WDS} \quad \text{for Channel Banks}$$

where: D_{75} = Size of the rock at 75% is finer in gradation, in inches

W = specific weight of water, usually 62.4 lbs./cu.ft.
D = Depth of flow in stream, in feet in flood stage.
S = Channel slope or gradient, in ft/ft.
C = A coefficient relating to curvature in the stream.
K = A coefficient relating to steepness of bank slopes.

b. The coefficient, C, is based on the ratio of the radius of curvature of the stream, (CR), to the water surface width, (WSW), so it is necessary for the user to make field determination of these values. The coefficient varies from 0.6 for a curve ratio of 4 to 6, up to 1.0 for a straight channel. If the computed ratio for a particular project is less than 4, the designer should consider some modification less than 4.

<u>CR/WSW</u>	<u>C</u>
4 - 6	0.60
6 - 9	0.75
9 - 12	0.90
Straight Channel	1.00

c. The coefficient, K, ranges from 0.5 for a 1.5:1 sideslope to 0.87 for 3:1 sideslope. No values are given for steeper or flatter slopes. Slopes steeper than 1.5:1 are not recommended. If slopes flatter than 3:1 are desired, it would be conservative to use the K-value for 3:1 slopes.

<u>Bankslope</u>	<u>K</u>
1.5:1	0.50
1.75:1	0.63
2.0:1	0.72
2.5:1	0.80
3.0:1	0.87

Table 1A
Riprap Gradation Using FWS Method

% Finer by Weight (Lbs.)	Minimum Size (Lbs.)	Maximum Size (Lbs.)
D ₁₀₀	1.33 X D ₇₅	2.0 X D ₇₅
D ₇₅	1.0 X D ₇₅	1.67 X D ₇₅
D ₅₀	0.67 X D ₇₅	1.17 X D ₇₅
D ₂₅	0.33 X D ₇₅	0.77 X D ₇₅
D ₀	None	0.33 X D ₇₅

Source: U.S. Soil Conservation Service "Engineering Field Manual," 1969.

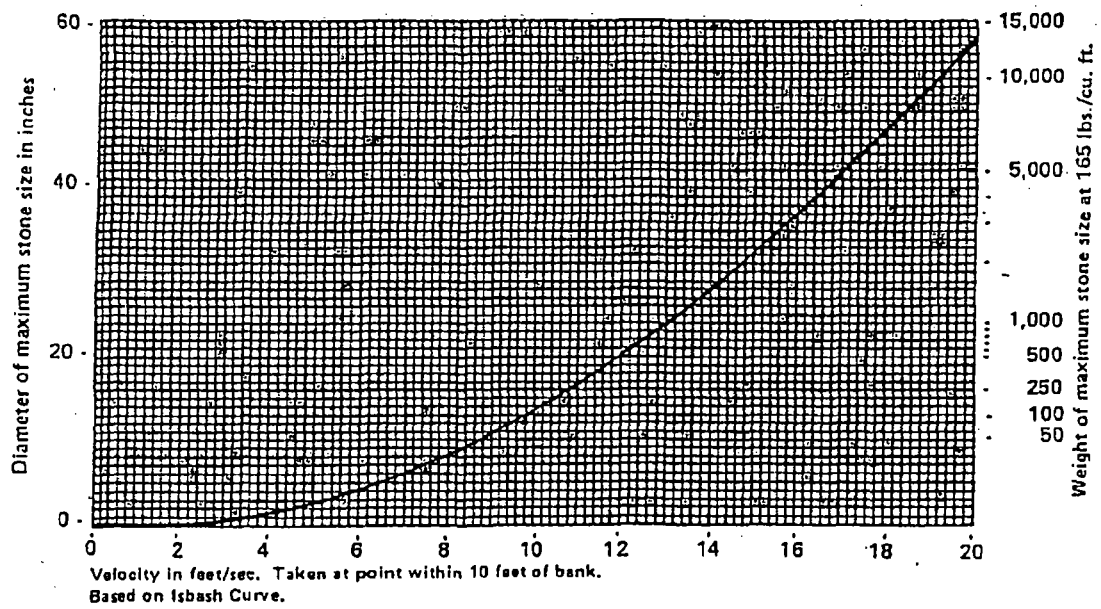
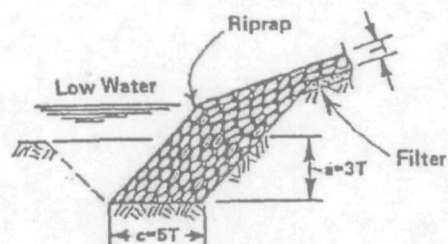


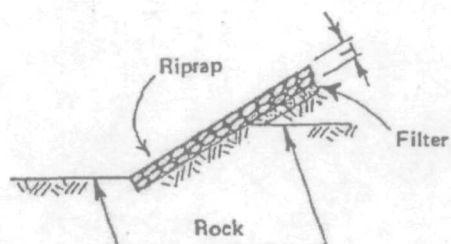
FIGURE 1. Maximum stone size for riprap for sideslope no steeper than 1½:1

Table 1A
Riprap Gradation Using FWS Method

% Finer by Weight (Lbs.)	Minimum Size (Lbs.)	Maximum Size (Lbs.)
D ₁₀₀	1.33 X D ₇₅	2.0 X D ₇₅
D ₇₅	1.0 X D ₇₅	1.67 X D ₇₅
D ₅₀	0.67 X D ₇₅	1.17 X D ₇₅
D ₂₅	0.33 X D ₇₅	0.77 X D ₇₅
D ₀	None	0.33 X D ₇₅

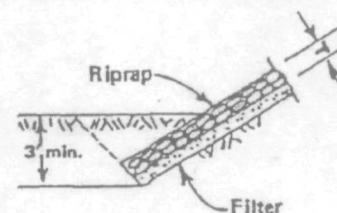


METHOD 4: Used underwater in areas with extremely bad streambed erosion conditions which make Method 3 unfeasible. This method may also be preferred where Method 3 would destroy fish spawning beds.

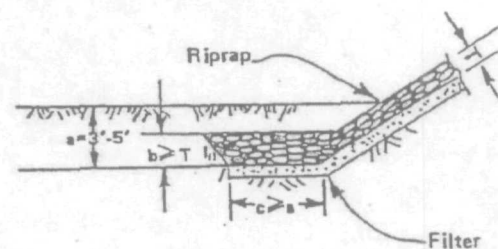


METHOD 5: When the streambed is non-erodible, no special provisions for toe protection are needed other than insuring that the riprap is well keyed to the rock.

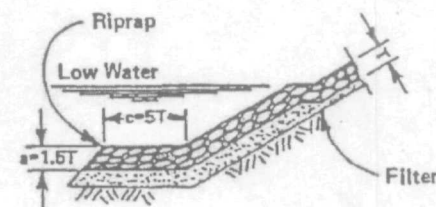
FIGURE 2. Acceptable toe protection *continued*



METHOD 1: This is most suited to areas where the toe is dry during construction.

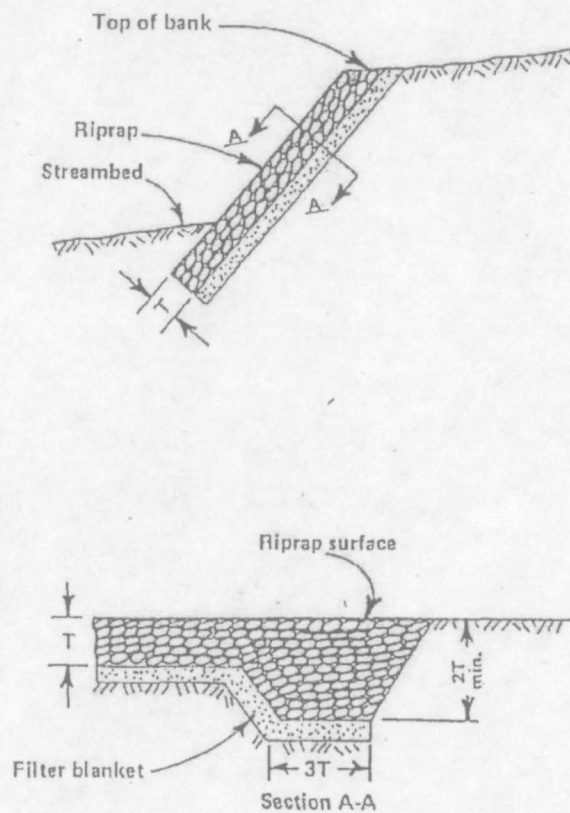


METHOD 2: Used when streambed is very wet or ground-water present makes using Method 1 impractical.



METHOD 3: Often used when toe is underwater during construction. Both Methods 2 and 3 utilize the idea that undermining will cause rock at toe blanket to settle into eroded area providing protection during scouring.

FIGURE 2. Acceptable toe protection



View shown above is cross section at end of riprap looking down along the sideslope toward streambed.

FIGURE 3. Protection against undermining

State of Idaho
Idaho Department of Fish and Game
Panhandle Region
2750 Kathleen Avenue
Coeur d'Alene, ID 83815
Phone (208)769-1414 Fax(208)769-1418

Received
JUL 19 RECD
St. Joe Woodlands

TO: Norm Linton, Potlatch Corporation (PO Box 386 St. Maries, ID 83861)

FROM:

Chip Corsi, IDFG



7/17/00

SUBJECT: Bank barb drawings

As you requested, I'm sending schematics for a standard bank barb design. These can be modified to enhance fish habitat by incorporating tree trunks with root wads into the structure, a measure I'd recommend be considered for this project. I continue to suggest designing the project so as to allow development of some riparian vegetation at the toe of the riprap, and to salvage and re-use existing cottonwoods and willows to do so. I believe this can be designed into the project without threatening the integrity of the liner.

Thanks for taking the time to meet with me Wednesday to look the site over, hope this information is helpful.

Potlatch

Potlatch Corporation
Resource Management Group
Idaho Region

St. Joe Area Woodlands
P.O. Box 386
St. Maries, Idaho 83861-0386
Telephone (208) 245-4146
Fax (208) 245-6421

August 7, 2000

State of Idaho
Division of Environmental Quality
2110 Ironwood Parkway
Coeur d' Alene, ID 83814-2648

Attention: Kreg Beck

RE: Site Characterization Report (SCR) and Second quarter Performance Report –
Avery Landing

Dear Kreg:

In accordance with our Consent Order Modification dated April 20, 2000, Potlatch Corporation submits our Site Characterization Report for the Avery Landing Site. The Site Characterization Report was prepared by our Environmental Engineering Consultant, Hart Crowser, Inc., and it is attached for your review and comment.

The corrective action plan is in its final stages and you should receive the Final Plan by August 15, 2000.

Kreg, if you have any questions feel free to call me at my St. Maries office.

Sincerely,



Norm Linton
Area Manager

cc: John Emery
Greg Rapp

notes: address

1. Segregation of Contaminated soil
2. Remove Free Product encountered



HARTCROWSER

Delivering smarter solutions

www.hartcrowser.com

August 4, 2000

Anchorage

Mr. Norm Linton
Pottlatch Corporation
1100 Railroad Avenue
P.O. Box 386
St. Maries, Idaho 83861

Boston

Re: Site Characterization and Second Quarter 2000 Performance Report
Avery Landing Recovery System
J-2296-07

Chicago

Dear Mr. Linton:

Denver

Hart Crowser is pleased to present the Site Characterization and Second Quarter 2000 Performance Report for the Avery Landing free product recovery system. This letter report presents the results of our site characterization work completed in June 2000 and the second quarter groundwater elevations and product thickness measurements.

Fairbanks

SITE CHARACTERIZATION

Jersey City

The purpose of the site characterization was to better define the areal extent of petroleum impacted soil at the Avery Landing site and to determine the depth of free product. To accomplish this, twelve test pits were completed during the site characterization work. Slotted monitoring well casings were installed in eleven of the test pits. Test pit TP-1 had two slotted well casings installed. One casing was 2 inches in depth and the second was 4 inches. No casing was installed in TP-4 because free product was not encountered. This allowed us to install an extra monitoring well, TP-11, in a separate area needing better product delineation. The remaining ten test pit locations had 4-inch casings installed. Figure 1 depicts the location of the test pits and the estimated areal extent of free product based on field observations.

Juneau

Long Beach

Test pits TP-2, TP-3, TP-5, TP-7, TP-10, and TP-12 contained a visible sheen of product during installation. Upgradient wells were installed within the free product zone, while the downgradient wells were moved slightly outside the plume when possible. This will allow better plume delineation over the course of the remediation. As product is removed from the subsurface, the product thickness in the upgradient wells should decrease. Product

Portland

Seattle

1910 Fairview Avenue East
Seattle, Washington 98102-3699
Fax 206.328.5581
Tel 206.324.9530

K 00068



occurring in downgradient wells will indicate migration of the plume. The newly installed wells will be monitored on the same schedule as existing wells.

GROUNDWATER AND PRODUCT QUARTERLY MONITORING

Four extraction wells (EW-1 through EW-4), two piezometers (P1 and P2), four monitoring wells (MW-5, MW-11, HC-1, and HC-4), and twelve test pits (TP-1 (2"), TP-1 (4"), TP-2, TP-3, TP-5, TP-6, TP-7, TP-8, TP-9, TP-10, TP-11, and TP-12) were monitored on June 14, 2000. Well, piezometer, and test pit locations are shown on Figure 1. At each monitoring location, depth to product and depth to groundwater measurements were performed using a Solinist, a free product measuring device.

The extraction well operation was observed as follows:

- ▶ EW-1 is no longer in use, as described in the 1998 Annual Report;
- ▶ EW-2 was operating and maintaining groundwater depression; and
- ▶ EW-3 and EW-4 were operating but not maintaining groundwater capture. Free product was not detected in either EW-3 or EW-4.

Based on both past and present data, the plume area is defined as shown on Figure 1. The free product area did not differ dramatically from what was originally estimated, but the estimated depth of product over that area has decreased significantly. Based on the monitoring points in TP-1, it appears the product depth in the 2-inch monitoring wells may be exaggerating the depth of product by an order of magnitude. The 4-inch casings installed seem to be much more representative of the actual product depth in the soils. TP-1 was left open for two days to best show the actual *in situ* depth of product. The measured depth of product in TP-1 after two days was 0.04 foot. This was the same as the depth measured in the 4-inch casing, and 10 times less than that measured in the 2-inch casing. Future monitoring events should continue to show a smaller overall depth of product for the site than was originally estimated. Using a conservative estimate of 0.03 foot of product over the entire plume area of 92,000 square feet, approximately 21,000 gallons of oil may exist on site.



Potlatch Corporation
August 4, 2000

J-2296-07
Page 3

FREE PRODUCT RECOVERY

The current approximate total product removed is 775 gallons. About 25 gallons of product have been extracted in the last two quarters of system operation. Product recovery rates usually increase during the low water summer months.

PROJECT SCHEDULE

Table 2 presents the project schedule for the remainder of 2000. We plan to perform the next monitoring event on September 20, 2000, and will submit the third quarter monitoring report by October 13, 2000. Construction of the containment wall is scheduled for the second and third weeks of September. The construction schedule depends on Potlatch receiving the required permits.

**Table 2- Avery Landing Recovery System
2000 Project Schedule**

<u>Activity</u>	<u>Schedule</u>
Containment Wall Construction	September 11-20, 2000
Perform 3rd Quarter Site Visit	September 20, 2000
Submit 3rd Quarter Monitoring Report	October 13, 2000
Perform 4th Quarter Site Visit	December 7, 2000
Submit 4th Quarter Monitoring Report	December 29, 2000
Submit Annual Summary Report	February 9, 2001

LIMITATIONS

Work for this project was performed, and this letter report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed, in the same or similar location, at the time the work was performed. It is intended for the exclusive use of the Potlatch Corporation for specific application to the referenced property.



Potlatch Corporation
August 4, 2000

J-2296-07
Page 4

If additional information or clarification is required, please call Terry Montoya at
(206) 324-9530.

Sincerely,

HART CROWSER, INC.

Terry Montoya by 828
TERRY MONTOYA
Project Engineer

Matt Schultz by 828
MATT SCHULTZ, P.E.
Senior Associate Engineer

F:\docs\jobs\229607\2ndQtr00.doc

Attachments:

Table 1 - Avery Landing Groundwater and River Monitoring Data

Figure 1 - Avery Landing First Quarter 2000 Groundwater Flow Direction Map

cc: Kreg Beck, Idaho Department of Environmental Quality

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 1 of 6

Comments

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.P. Elevation	Groundwater Elevation
EW-1 <i>HCL</i>	10/27/1994	ND	11	0	95.34	84.34
	6/30/1995	ND	10.9	0	95.34	84.44
	9/21/95	11.25	11.27	0.02	95.34	84.07
	7/11/1996	ND	9.74	0	95.34	85.60
	9/11/1996	ND	10.88	0	95.34	84.46
	11/5/1996	ND	11.94	0	95.34	83.40
	7/17/1997	ND	10.38	0	95.34	84.96
	10/9/1997	ND	13.17	0	95.34	82.17
	6/25/1998	ND	10.01	0	95.34	85.33
	8/12/1998	NM	10.52	0	95.34	84.82
	10/22/1998	Sheen	10.86	0	95.34	84.48
	3/18/1999			0	95.34	85.57
	6/22/1999	ND	11.68	0	95.34	83.66
	9/16/1999	ND	10.72	0	95.34	84.62
	12/2/1999	ND	9.78	0	95.34	85.56
	3/30/2000	ND	9.03	0	95.34	86.31
EW-2 <i>HCL</i>	10/27/1994	ND	10.37	0	95.24	84.87
	6/30/1995	10.57	10.89	0.32	95.24	84.35
	9/21/95	13.9	13.92	0.02	95.24	84.32
	7/11/1996	11.03	11.66	0.63	95.24	83.58
	9/11/1996	Sheen	14.00	0	95.24	81.24
	11/5/1996	Sheen	12.27	0	95.24	82.97
	7/17/1997	8.99	9.09	0.1	95.24	86.15
	10/9/1997	Sheen	15.44	0	95.24	79.80
	6/25/1998	9.19	9.64	0.45	95.24	85.60
	8/12/1998	NM	9.99	0	95.24	85.25
	10/22/1998	Sheen	10.94	0	95.24	84.30
	3/18/1999	10.17	10.27	0.1	95.24	84.97
	6/22/1999	11.3	11.31	0.01	95.24	83.93
	9/16/1999	15.32	15.35	0.03	95.24	79.89
	12/2/1999	9.91	10.1	0.19	95.24	85.14
	3/30/2000	9.5	10.29	0.79	95.24	84.95
	6/14/2000	8.89	9.39	0.5	95.24	85.85
EW-3	10/27/1994	ND	10.05	0	95.78	85.73
	6/30/1995	9.35	9.8	0.45	95.78	85.98
	9/21/95	10.92	11.08+	0.16	95.78	84.70
	7/11/1996	8.53	8.64	0.11	95.78	87.14
	9/11/1996	10.75	11.70	0.95	95.78	84.08
	11/5/1996	Sheen	11.8	0	95.78	83.98
	7/17/1997	9.13	9.33	0.2	95.78	86.45
	10/9/1997	10.9	11.68	0.78	95.78	84.10
	6/25/1998	8.78	9.43	0.65	95.78	86.35
	8/12/1998	ND	11	0	95.78	84.78
	10/22/1998	12.58	13.38	0.8	95.78	82.40

229607\2ndQtr00.xls - Monitoring Results

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 2 of 6

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
EW-3 (Continued)	3/18/1999	9.03	9.23	0.2	95.78	86.55
	6/22/1999	11.1	11.25	0.15	95.78	84.53
	9/16/1999	10.76	11.06	0.3	95.78	84.72
	12/2/1999	9.04	9.1	0.06	95.78	86.68
	3/30/2000	ND	9.08	0	95.78	86.70
	6/14/2000	ND	7.68	0	95.78	88.10
EW-4	10/27/1994	ND	8.05	0	94.32	86.27
	6/30/1995	7.84	7.85	0.01	94.32	86.47
	9/21/95	8.22	8.24	0.02	94.32	86.08
	7/11/1996	Sheen	6.44	0	94.32	87.88
	11/5/1996	Sheen	8.08	0	94.32	86.24
	7/17/1997	Sheen	5.43	0	94.32	88.89
	10/9/1997	Sheen	7.11	0	94.32	87.21
	6/25/1998	5.28	5.3	0.02	94.32	89.02
	8/12/1998	NM	8.98	0	94.32	85.34
	10/22/1998	ND	8.98	0	94.32	85.34
	3/18/1999	5.18	5.26	0	94.32	89.06
	6/22/1999	Sheen	9	0	94.32	85.32
	9/16/1999	8.45	9.27	0.82	94.32	85.05
	12/2/1999	7.31	7.36	0.05	94.32	86.96
	3/30/2000	Sheen	6.5	0	94.32	87.82
	6/14/2000	ND	4.69	0	94.32	89.63
HC-1	10/27/1994	ND	13.25	0	97.50	84.25
	6/30/1995	ND	12.00	0	97.50	85.50
	9/21/95	NM	13.42	0	97.50	84.08
	7/11/1996	ND	11.92	0	97.50	85.58
	9/11/1996	ND	12.90	0	97.50	84.60
	11/5/1996	Could not locate due to snow				
	7/17/1997	ND	11.27	0	97.50	86.23
	10/9/1997	ND	12.87	0	97.50	84.63
	6/25/1998	ND	11.85	0	97.50	85.65
	8/12/1998	NM	12.97	0	97.50	84.53
	10/22/1998	ND	13.1	0	97.50	84.40
	3/18/1999	ND	11.7	0	97.50	85.80
	6/22/1999	ND	9.28	0	97.50	88.22
	9/16/1999	ND	12.98	0	97.50	84.52
	12/2/1999	Well Under Standing Water				
	3/30/2000	ND	11.24	0	97.50	86.26
	6/14/2000	ND	10.73	0	97.50	86.77
HC-4	10/27/1994	13.3	15.34	2.04	98.94	83.60
	6/30/1995	11.89	15.49	3.6	98.94	83.45
	9/21/95	13.67	NM	NM	98.94	85.27
	7/11/1996	11.58	12.93	1.35	98.94	86.01
	9/11/1996	13.53	13.93	0.40	98.94	85.01
	11/5/1996	11.82	13.62	1.80	98.94	85.32

229607\2ndQtr00.xls - Monitoring Results

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 3 of 6

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
HC-4 (Continued)	7/17/1997	11.65	13.25	1.60	98.94	85.69
	10/9/1997	12.67	14.92	2.25	98.94	84.02
	6/25/1998	11.53	12.49	0.96	98.94	86.45
	8/12/1998	NM	13.9	NM	98.94	85.04
	10/22/1998	10.3	14.7	4.40	98.94	84.24
	3/18/1999	10.5	14.05	4.45	98.94	84.89
	6/22/1999	16.9	13.9	4.00	98.94	85.04
	9/16/1999	15.89	17.57	1.68	98.94	81.37
	12/2/1999	Not Measured				
	3/30/2000	10.68	11.70	1.02	98.94	87.24
	6/14/2000	10.41	10.92	0.51	98.94	88.02
HC-5	11/5/1996	ND	11.22	0	97.95	86.73
	7/17/1997	Monument under standing water				
	10/9/1997	Monument under standing water				
	6/25/1998	Lost during road construction				
	6/14/2000	ND	7.71	0	97.95	90.24
MW-4	9/14/94	ND	12.88	0	99.76	86.88
	6/30/95	ND	10.19	0	99.76	89.57
	9/21/95	ND	11.95	0	99.76	87.81
	7/11/1996	Sheen	10.18	0	99.76	89.58
	9/11/1996	Sheen	11.33	0	99.76	88.43
	11/5/1996	Lost during road construction				
MW-5	10/27/1994	ND	10.45	0	97.76	87.31
	6/30/1995	ND	9.13	0	97.76	88.63
	9/21/95	ND	10.83	0	97.76	86.93
	7/11/1996	ND	8.98	0	97.76	88.78
	9/11/1996	ND	10.71	0	97.76	87.05
	11/5/1996	ND	10.65	0	97.76	87.11
	7/17/1997	ND	8.75	0	97.76	89.01
	10/9/1997	ND	10.89	0	97.76	86.87
	6/25/1998	ND	8.56	0	97.76	89.20
	8/12/1998	NM	10.68	0	97.76	87.08
	10/22/1998	ND	13.5	0	97.76	84.26
	3/18/1999	ND	8.8	0	97.76	88.96
	6/22/1999	ND	6.44	0	97.76	91.32
	9/16/1999	ND	10.8	0	97.76	86.96
	12/2/1999	ND	9.82	0	97.76	87.94
	3/30/2000	ND	8.39	0	97.76	89.37
	6/14/2000	ND	9.07	0	97.76	88.69
MW-11	9/14/94	12	NA	NA	98.16	NA
	6/30/95	5.54	7.25	1.71	98.16	90.41
	7/11/1996	6.34	10.00	3.66	98.16	88.16
	9/11/1996	3.25	7.20	3.95	98.16	90.96
	11/5/1996	3.05	7.20	4.15	98.16	90.96
	7/17/1997	6.33	9.99	3.66	98.16	88.17
	8/12/1998	NM	3.90	NM	98.16	94.26
	10/22/1998	6.96	8.00	1.04	98.16	90.16
	9/16/1999	Not Measured				

229607\2ndQtr00.xls - Monitoring Results

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 4 of 6

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
MW-11 (Continued)	12/2/1999	6.9	7.37	0.47	98.16	90.79
	3/30/2000	7.33	7.82	0.49	98.16	90.34
	6/14/2000	8.2	10.95	2.75	98.16	87.21
P-1	10/27/1994	ND	17.31	0	101.42	84.11
	6/30/1995	ND	16.72	0	101.42	84.70
	9/21/95	ND	17.4	0	101.42	84.02
	7/11/1996	ND	15.87	0	101.42	85.55
	9/11/1996	ND	16.98	0	101.42	84.44
	11/5/1996	ND	17.06	0	101.42	84.36
	7/17/1997	ND	15.34	0	101.42	86.08
	10/9/1997	ND	17.64	0	101.42	83.78
	6/25/1998	ND	14.53	0	101.42	86.89
	8/12/1998	NM	16.72	0	101.42	84.70
	10/22/1998	ND	15.6	0	101.42	85.82
	3/18/1999	ND	15.65	0	101.42	85.77
	6/22/1999	ND	13	0	101.42	88.42
	9/16/1999	ND	16.84	0	101.42	84.58
	12/2/1999	ND	15.93	0	101.42	85.49
	3/30/2000	ND	15.14	0	101.42	86.28
	6/14/2000	ND	14.49	0	101.42	86.93
P-2	10/27/1994	ND	15.87	0	100.06	84.19
	6/30/1995	ND	15.26	0	100.06	84.80
	9/21/95	ND	16.04	0	100.06	84.02
	7/11/1996	ND	14.52	0	100.06	85.54
	9/11/1996	ND	15.62	0	100.06	84.44
	11/5/1996	ND	15.08	0	100.06	84.98
	7/17/1997	ND	13.92	0	100.06	86.14
	10/9/1997	ND	16.09	0	100.06	83.97
	6/25/1998	ND	15.95	0	100.06	84.11
	8/12/1998	NM	15.3	0	100.06	84.76
	10/22/1998	NM	16.95	0	100.06	83.11
	3/18/1999	NM		0	100.06	86.02 ****
	6/22/1999	ND	11.65	0	100.06	88.41
	9/16/1999	ND	15.46	0	100.06	84.60
	12/2/1999	ND	14.55	0	100.06	85.51
	3/30/2000	ND	13.79	0	100.06	86.27
	6/14/2000	ND	13.13	0	100.06	86.93
River at EW-1	10/27/1994					83.12 *
	6/30/1995					84.03 **
	9/21/95					82.24
	7/11/1996					83.74 ***
	9/11/1996					82.56
	11/5/1996					83.16
	7/17/1997					82.39
	10/9/1997					83.00
	6/25/1998					85.22
	8/12/1998					85.42
	10/22/1998					85.00
	3/18/1999					83.93

229607\2ndQtr00.xls - Monitoring Results

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 5 of 6

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
River at EW-1 (Continued)	6/22/1999					83.93
	9/16/1999					78.28
	12/2/99					78.28
	3/30/2000					84.93
River at EW-2	10/27/1994					84.41
	6/30/1995					85.32
	9/21/95					83.53
	7/11/1996					85.03
	9/11/1996					83.85
	11/5/1996					83.59
	7/17/1997					85.35
	10/9/1997					84.20
	6/25/1998					86.42
	8/12/1998					86.62
	10/22/1998					86.20
	3/18/1999					85.13
	6/22/1999					85.13
	9/16/1999					79.48
	12/2/1999					84.17
	3/30/2000					86.13
River at EW-3	10/27/1994					85.16 *
	6/30/1995					86.07
	9/21/95					84.28
	7/11/1996					85.78 ***
	9/11/1996					84.60
	11/5/1996					84.10
	7/17/1997					86.31
	10/9/1997					85.16
	6/25/1998					85.16
	8/12/1998					85.65
	10/22/1998					85.23
	3/18/1999					86.10
	6/22/1999					89.45
	9/16/1999					85.29
	12/2/1999					85.13
	3/30/2000					87.09
River at EW-4	10/27/1994					86.49 *
	6/30/1995					87.40
	9/21/95					85.61
	7/11/1996					87.11 ***
	9/11/1996					85.93
	11/5/1996					86.44
	7/17/1997					87.27
	10/9/1997					86.12
	6/25/1998					88.34
	8/12/1998					88.54
	10/22/1998					88.12
	3/18/1999					87.05

229607\2ndQtr00.xls - Monitoring Results

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 6 of 6

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
River at EW-4 (Continued)	6/22/1999					90.40
	9/16/1999					86.89
	12/2/1999					86.09
	3/30/2000					88.07
TP-1 (2")	6/14/2000	13.24	13.75	0.51	96.06	82.31
TP-1 (4")	6/14/2000	13.7	13.74	0.04	96.66	82.92
TP-2 (4")	6/14/2000	Sheen	13.12	0	96.04	82.92
TP-3 (4")	6/14/2000	Sheen	14.11	0	97.34	83.23
TP-5 (4")	6/14/2000	Sheen	13.57	0	97.83	84.26
TP-6 (4")	6/14/2000	12.39	12.41	0.02	96.66	84.25
TP-7 (4")	6/14/2000	Sheen	11.95	0	96.08	84.13
TP-8 (4")	6/14/2000	ND	14.63	0	97.2	82.57
TP-9 (4")	6/14/2000	ND	15.5	0	97.28	81.78
TP-10 (4")	6/14/2000	Sheen	15.35	0	96.56	81.21
TP-11 (4")	6/14/2000	ND	15.3	0	96.36	81.06
TP-12 (4")	6/14/2000	Sheen	12.49	0	95.9	83.41

Notes:

All measurements in feet.

* River elevation was extrapolated from the river surface slope measured in 1995 and the river elevation measured south of EW-2 in 1994.

** River elevation was extrapolated from river surface slope, based on river elevations measured south of EW-2, EW-3, and EW-4 in 1995.

*** River elevation was extrapolated from river surface slope, and the wood dock benchmark.

T.O.C. - Top of Casing

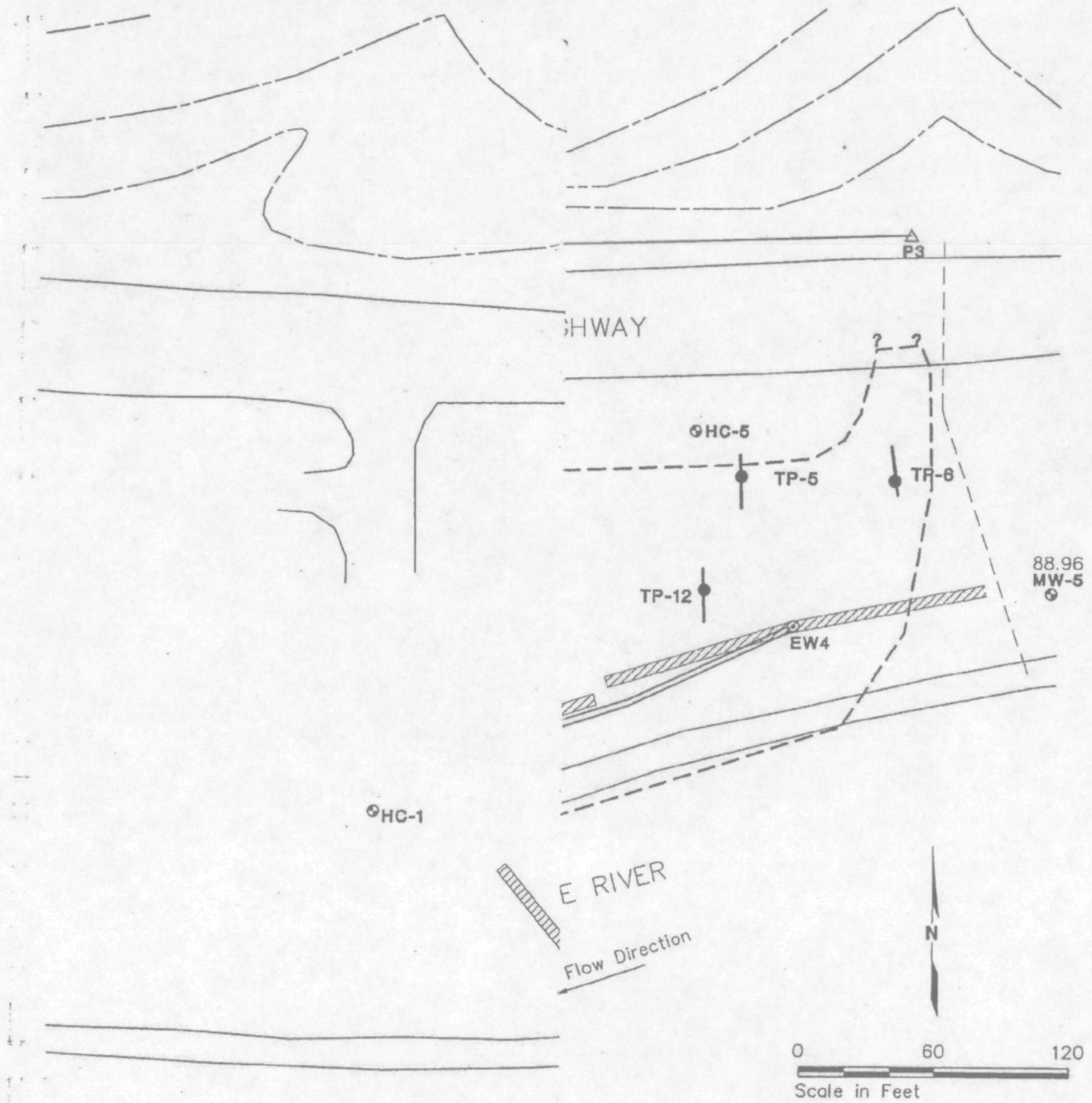
ND - Not Detected

NA - Not Available

NM - Not Measured

229607\2ndQtr00.xls - Monitoring Results

Test Pit and Monitorin



Exploration Location

● MW-4	Monitoring Well	and Number
● EW1	Extraction Well	ocation
△ P1	Piezometer	
● HC-5	Lost During Construc	



HARTCROWSER

J-2296-07 8/00

Figure 1

Potlatch

Potlatch Corporation
Resource Management Group
Idaho Region

St. Joe Area Woodlands
P.O. Box 386
St. Maries, Idaho 83861-0386
Telephone (208) 245-4146
Fax (208) 245-6421

August 15, 2000

State of Idaho
Division of Environmental Quality
2110 Ironwood Parkway
Coeur d' Alene, ID 83814-2648

Attention: Kreg Beck

RE: Corrective Action Plan – Avery Landing Site

Dear Kreg:

In accordance with our Consent Order Modification dated April 20, 2000, Potlatch Corporation submits our Corrective Action Plan for the Avery Landing Site. The Corrective Action Plan was prepared by our Environmental Engineering Consultant, Hart Crowser, Inc., and it is attached for your review and approval.

Your prompt review of our Corrective Action Plan would be appreciated. Our scheduled construction startup date is September 11, 2000.

Kreg, if you have any questions feel free to call me at my St. Maries office.

Sincerely,



Norm Linton
Area Manager

NL:sh
Attachment

cc: John Emery
: Greg Rapp
: Larry Bencik
: Greg Rayner – Corps of Engineers
: Greg Weigel – U.S., EPA, Boise
: Rick Donaldson – U.S.F.W.S., Spokane
: Chip Corsi – IDFG, Coeur d' Alene
: Ken Knoblock – ID Dept. of Water Resources



HARTCROWSER

Delivering smarter solutions

www.hartcrowser.com

August 7, 2000

Anchorage

Mr. Norm Linton
Area Manager
Potlatch Corporation
1100 Railroad Avenue
P.O. Box 386
St. Maries, Idaho 83861

Boston

Re: Corrective Action Plan
Avery Landing Site
Avery, Idaho
J-2296-07

Chicago

Denver

Dear Mr. Linton:

This report presents the Corrective Action Plan for Avery Landing Site in Avery, Idaho. The goal for this action is to stop migration of oil into the St. Joe River. The remedial method to ensure this goal is to excavate the existing shoreline and place an impermeable barrier upgradient of the river to block subsurface migration of free phase hydrocarbons (see Figure 1). Clean cover material would be placed over the impermeable barrier to restore the appearance and function of the shoreline. Figure 5 shows a generalized cross section of the repaired bank. The bottom elevation of the impermeable barrier will be sufficient to prevent migration of free phase hydrocarbons to the river, but not significantly impact the flow of groundwater.

Fairbanks

Jersey City

Juneau

Complete removal of free product in shoreline soil will require excavation below the normal low water elevation of the St. Joe River. A temporary cofferdam (see Figure 2) using retainer blocks will be constructed to keep the St. Joe River from running through the construction area.

Long Beach

To improve fish habitat during the shoreline restoration, four barbs will be constructed as shown on Figure 6. Additionally, the riparian zone above the riprap shoreline will be planted (see Figure 7).

Portland

The following sections describe the work to be completed in detail.

Seattle

1910 Fairview Avenue East
Seattle, Washington 98102-3699
Fax 206.328.5581
Tel 206.324.9530

K 00080



SILT CONTROL AND CONTINGENCY SPILL PLAN

During construction of the remedial action, release of silt and petroleum hydrocarbons to the environment will be controlled using retainer blocks, oil absorbent booms, an oil/water separator, and silt fences installed along a drainage ditch.

A retainer block cofferdam will be used to prevent the flow of water from the St. Joe River into the construction area (see Figure 1). Sandbags will be used to seal the retainer block wall and prevent the flow of water between adjacent blocks (see Figure 2). A dewatering pump will be used to remove water from the excavation area during construction. The water removed from the construction area behind the cofferdam will be run through an oil/water separator tank (Figure 3) and then released into a rock ditch with multiple silt fences. The effluent water will then drain back into the St. Joe River. Figure 1 depicts the general site layout and existing rock ditch. The oil/water separator (see Figure 3) will also act as a settling tank to help reduce turbidity in the water. Water quality of the discharge will be monitored visually. If the discharge becomes cloudy or obviously impacted with silt, the construction will be stopped until additional controls are installed and working.

An oil absorbent boom will be placed in the St. Joe River, outside of the retainer block cofferdam, to absorb and contain petroleum hydrocarbons in the event of a release to the river. This is the same procedure currently used at the site to control releases of petroleum products to the river. Additional oil absorbent booms will be available on site in the event of catastrophic failure of the retainer block cofferdam. In the event the cofferdam has to be unattended for more than one day, absorbent booms will be installed inside of the cofferdam to collect any material released from the shoreline.

WALL CONSTRUCTION

Construction of the containment wall will require excavation of about 10 feet horizontally of the existing river bank. Five collection wells will be installed along the wall to remove free product that becomes trapped behind the containment wall. Figure 4 depicts the layout of the containment wall and collection wells. A liner will be placed along the cut-off wall to prevent migration of the free phase petroleum product but allow groundwater to flow beneath the wall to the St. Joe River. Riprap will be placed on the river-side of the cut-off wall to hold the liner in place, and provide suitable fish habitat.



Removal Activities

The existing shoreline will be excavated to provide a stable slope from the top of the bank to 2 feet below the low water mark. In addition, five areas will be excavated into the slope to accommodate 2- to 3-foot-diameter 15-foot-long vertical collection wells. Native vegetation and existing soil will be retained to the extent possible for use in replanting the remediation area. Soil stained by contact with petroleum hydrocarbons will be stockpiled in an upland area of the site. The soils will be spread out in a thin layer to maximize natural attenuation of the contamination.

The construction water behind the cofferdam will be pumped to the oil/water separator to allow for the installation of the liner. Sheens on construction water will be removed using absorbent booms and pads. Every effort will be made to ensure no residual oil is left on the river side of the containment wall.

Liner Installation

A 30-mil oil-resistant PVC alloy liner (Arctic Liner), or equivalent, will be used to prevent migration of petroleum hydrocarbons in the subsurface. The liner will be installed between two layers of 12-ounce non-woven geosynthetic fabric, or equivalent, to prevent puncturing the membrane during installation. A 6-inch bedding layer and a 6-inch cover layer will provide a uniform surface for placing the liner and cover materials. An 18-inch thick layer of crushed rock or clean fill will be placed over the cover layer as a base for the riprap layer. The placement of these materials is depicted on Figure 5.

Riprap Installation

Large, two-man rocks (200 to 500 pounds each) will be placed along the cut-off wall, trailing into the river. The riprap will protect the cut-off wall from erosion and provide aquatic habitat. Once the riprap is installed, the retainer block cofferdam will be removed to restore normal stream flow in the St. Joe River.

Riprap barbs will be installed as shown on Figure 6 to break up the shoreline current and provide additional aquatic habitat. An excavator will place the riprap directly on the riverbed, disturbing the river bottom as little as possible.



Potlatch Corporation
August 7, 2000

J-2296-07
Page 4

RIPARIAN ZONE INSTALLATION

The riparian zone installed above the cut-off wall will be planted with native vegetation to promote a natural appearance for the site. Native shrubs retained during the shoreline excavation will be placed along an 8- to 10-foot-wide strip of flat ground above the riprap wall (see Figure 7). Cottonwood and willow trees will be planted along the wall to provide shade to the river habitat.

LONG-TERM SITE MONITORING

Monitoring in collection wells 1 and 5 (CW-1 and CW-5) will be required to ensure the free product captured by the wall does not build up to a thickness that could migrate around the end of the wall. Assuming a 10-foot smear zone CW-1 and CW-5 would require about 320 gallons of free product oil to fully saturate the 80 feet of soil between the collection well and the end of the wall. Based on a 3-foot-diameter collection well, the total thickness of free product allowed to collect in the well should not exceed 6 feet. Allowing for a long-term build-up of saturated soils and a safety factor of 6, the product in the well should be removed from the collection well whenever it exceeds 1 foot. If a 2-foot-diameter collection well is used, product should still be removed when the thickness exceeds 1 foot to limit the product gradient toward the end of the wall.

LIMITATIONS

Work for this project was performed, and this letter report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of Potlatch Corporation for specific application to the referenced property. This report is not meant to represent a legal opinion. No other warranty, express or implied, is made.



Potlatch Corporation
August 7, 2000

J-2296-07
Page 5

Any questions regarding our work and this letter report, the presentation of the information, and the interpretation of the data are welcome and should be referred to the undersigned.

We trust that this report meets your needs.

Sincerely,

HART CROWSER, INC.

TERRY W. MONTOYA
Project Manager

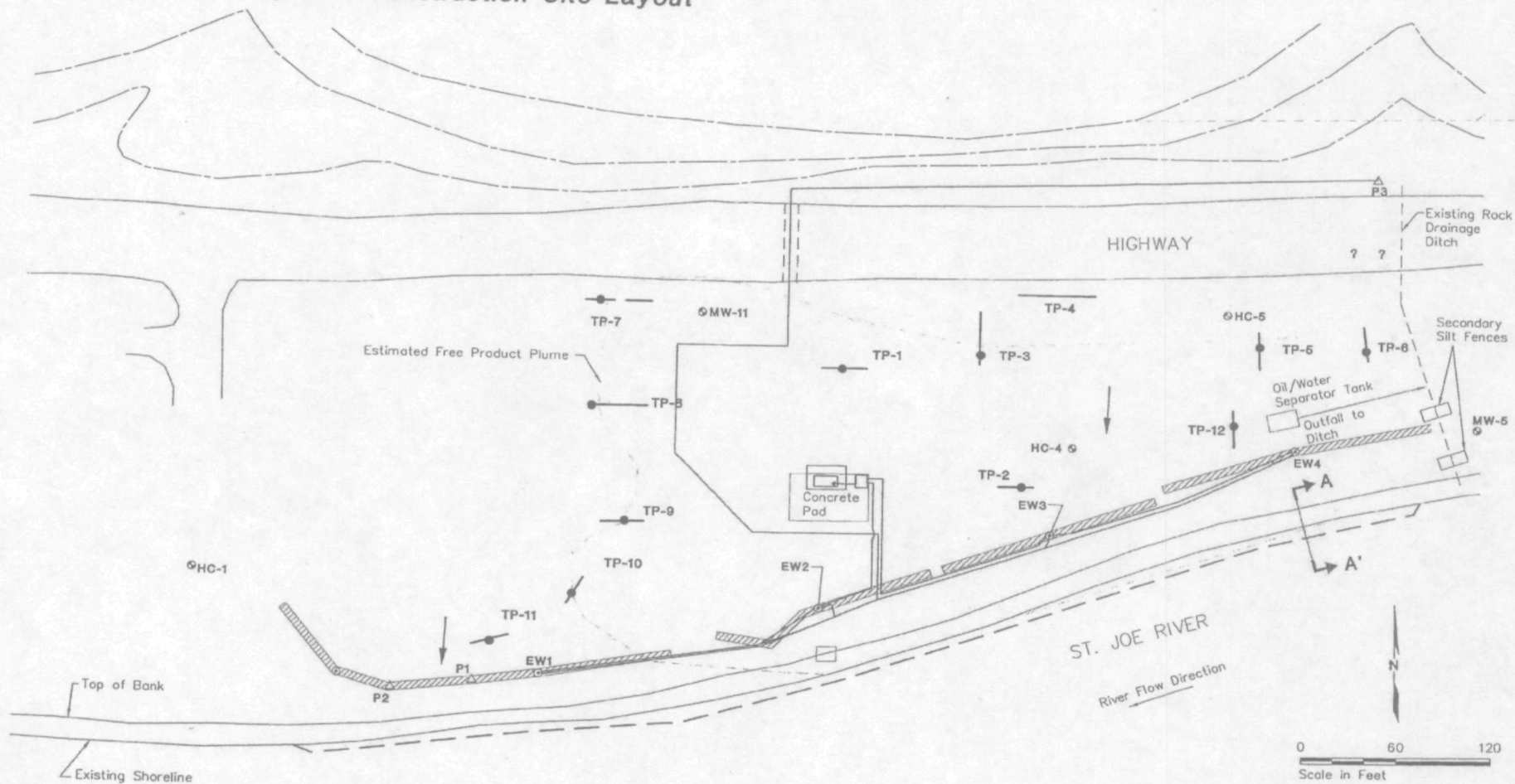
MATTHEW F. SCHULTZ, P.E.
Sr. Associate Chemical Engineer

F:\Docs\Jobs\229607\CorrectAction(ltr).doc

Attachments:

- Figure 1 - Site Plan and Proposed Construction Site Layout
- Figure 2 - Retainer Block Cofferdam Detail
- Figure 3 - Oil/Water Separator Detail
- Figure 4 - Proposed Containment Wall Location
- Figure 5 - Containment Wall Detail
- Figure 6 - Barb Detail
- Figure 7 - Riparian Zone and Riprap Wall Area

Site Plan and Proposed Construction Site Layout



Exploration Location and Number

- ⊙ MW-4 Monitoring Well
- ⊙ EW1 Extraction Well
- Δ P1 Piezometer

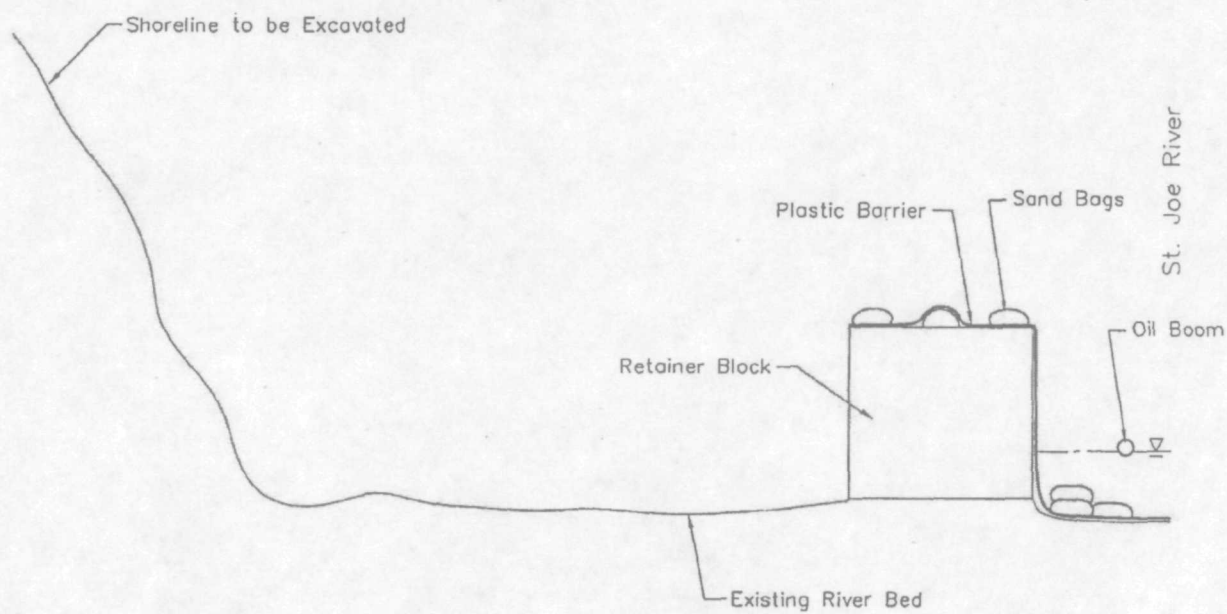
- ← Approximate Groundwater Flow Direction
- ▨ Existing Extraction Trench
- - - Free Product Plume Area
- - - Retainer Block/Sand Bag Cofferdam

- TP-1 Test Pit Location and Number
- TP-1 Test Pit Monitoring Well Location and Number
- ↔ A A' Cross Section Location and Designation (See Figure 2)

HARTCROWSER
J-2296-07 7/00
Figure 1

Retainer Block Cofferdam Detail

Cross Section A-A'



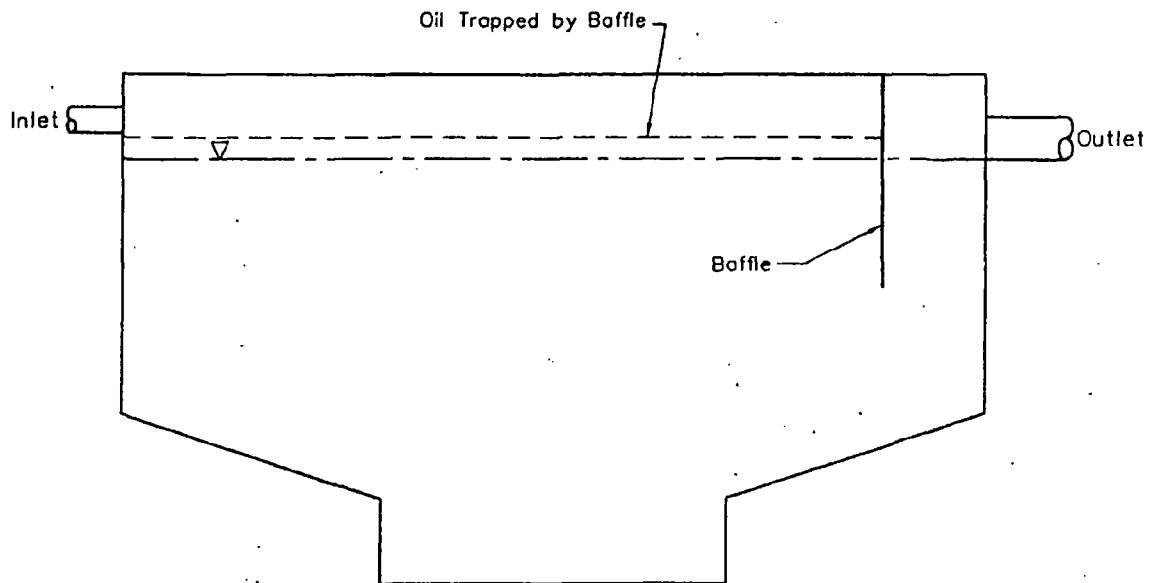
Not to Scale

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22960715

HARTCROWSER
J-2296-07 7/00
Figure 2

K 00086

Oil/Water Separator Detail

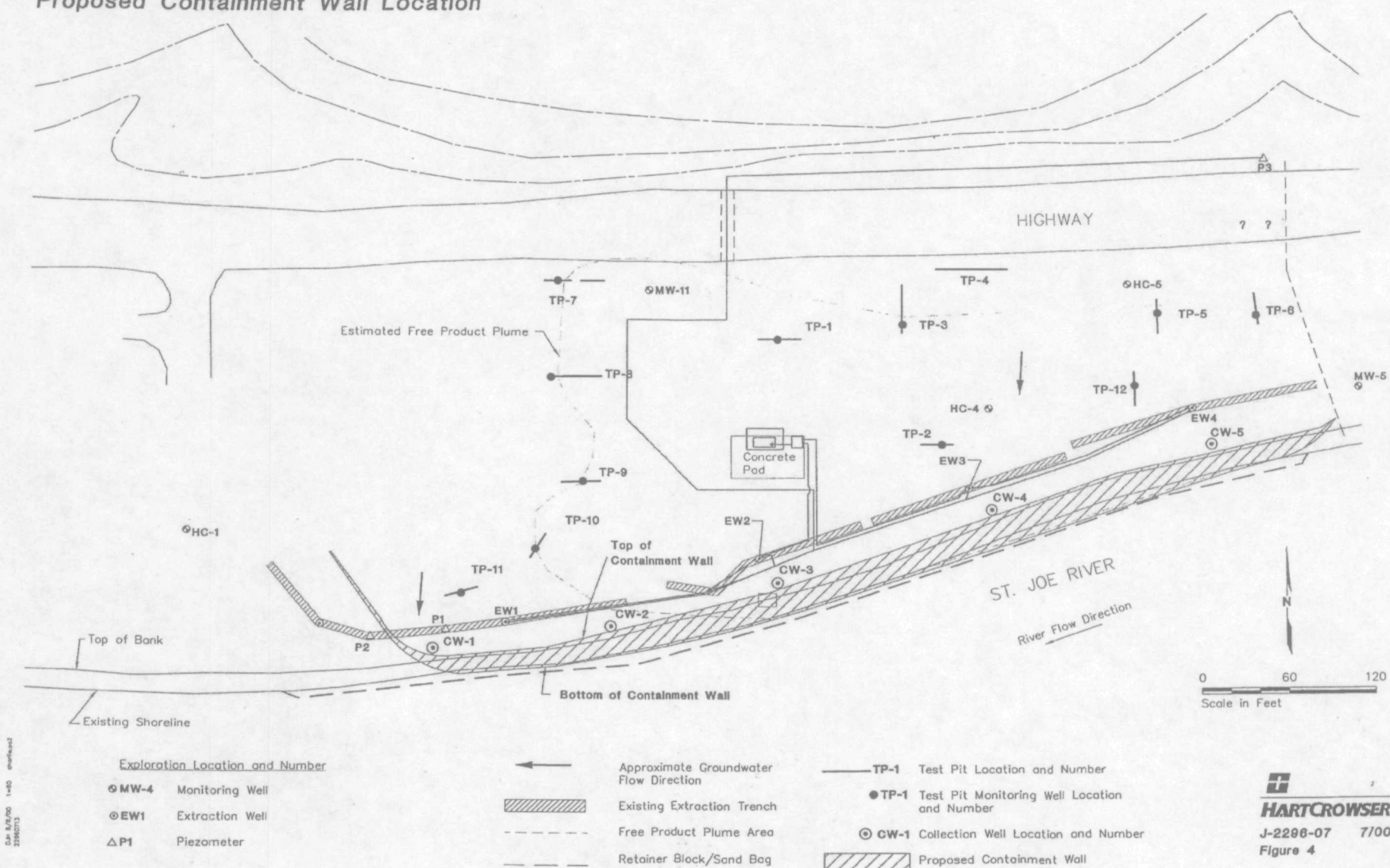


87th 7/26/00 1=1 chris.pd
22960716

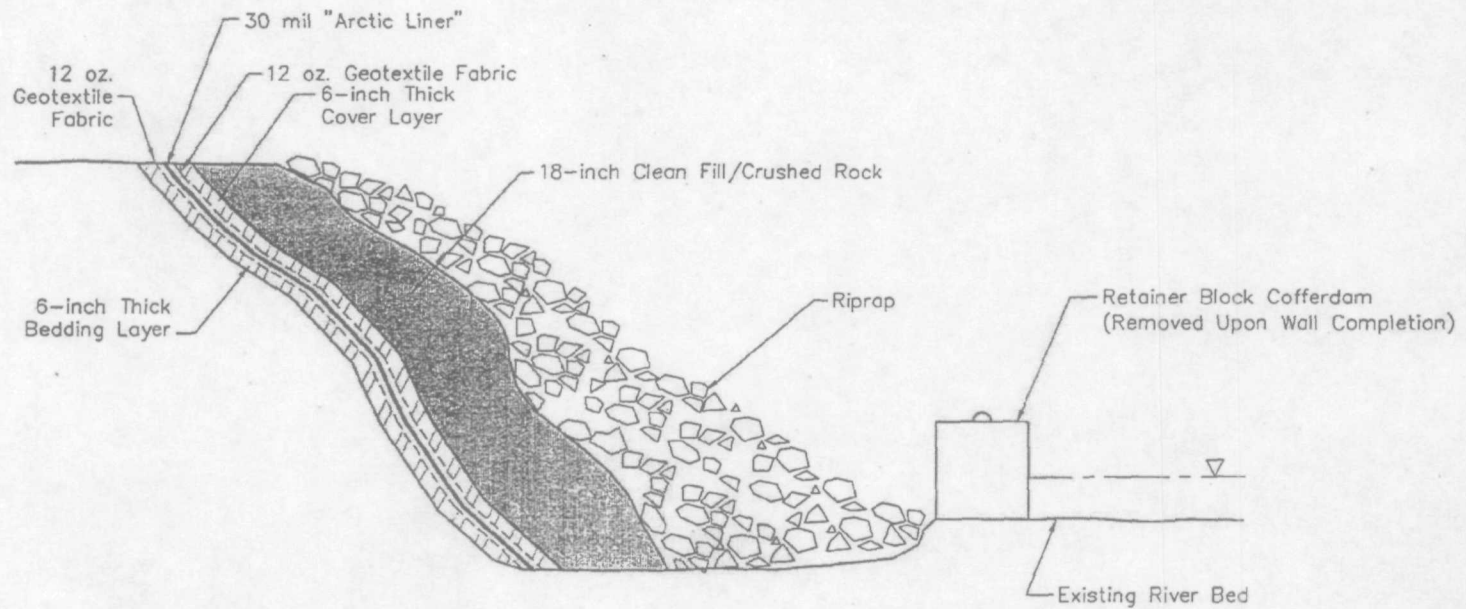
HARTCROWSER
J-2296-07 7/00
Figure 3

K 00087

Proposed Containment Wall Location



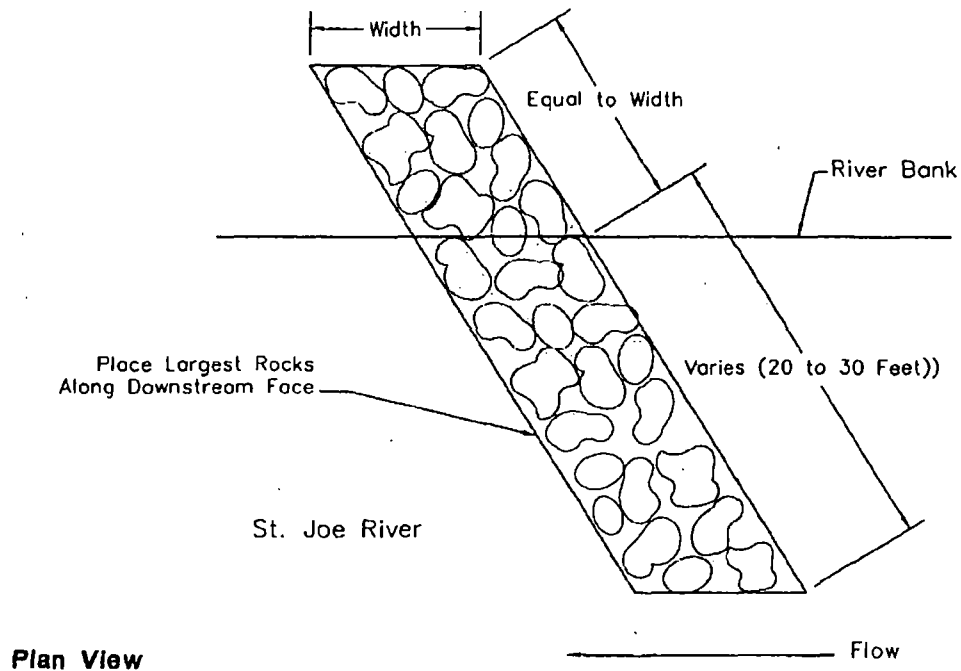
Containment Wall Detail



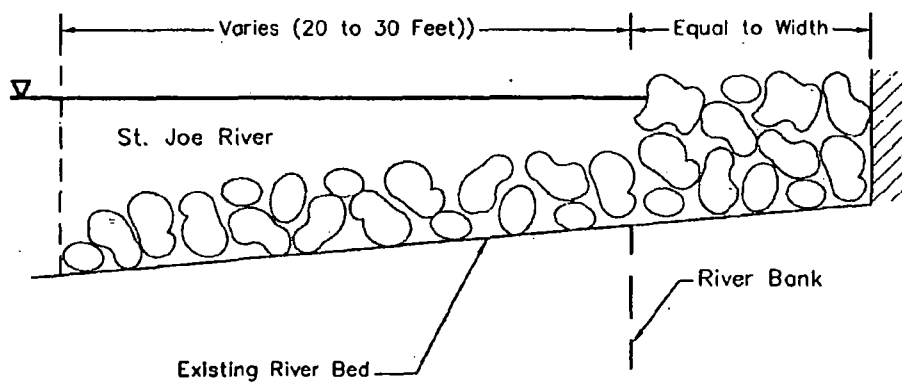
Not to Scale

HARTCROWSER
J-2298-07 7/00
Figure 6

Barb Detail



Plan View



Cross Section



HARTCROWSER

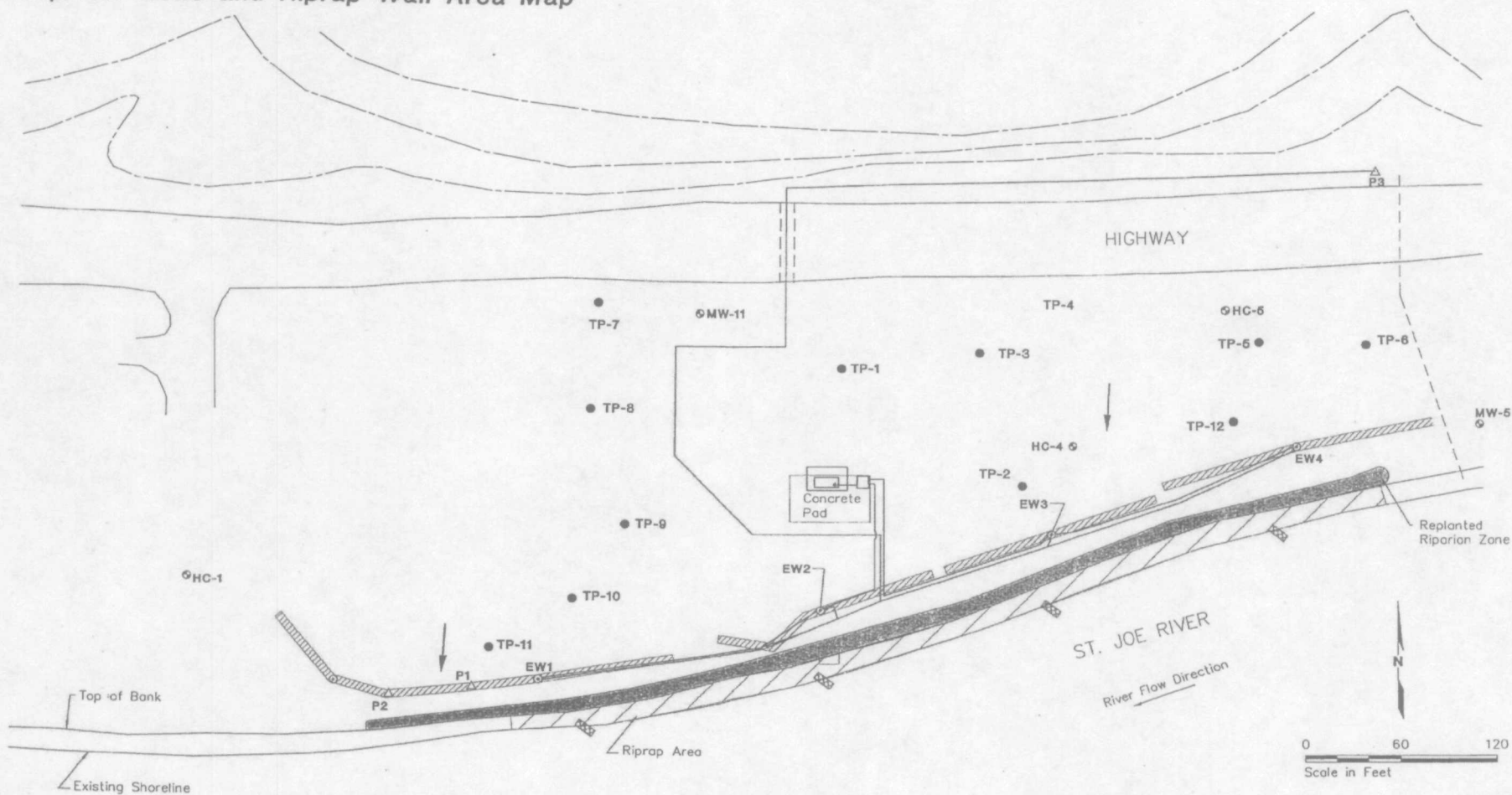
J-2296-07 7/00

Figure 6

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22960716

Riparian Zone and Riprap Wall Area Map

K 00091



Exploration Location and Number

- MW-4 Monitoring Well
- EW-1 Extraction Well
- △ P-1 Piezometer

- ← Approximate Groundwater Flow Direction
- ▨ Existing Extraction Trench
- Area of Riparian Zone to be Replanted

- TP-1 Test Pit/Monitoring Well Location and Number
- ▤ Riprap Barb Location

0 60 120
Scale in Feet

HARTCROWSER
J-2298-07 7/00
Figure 7

DATE: 1/1/00
BY: JAC
229807A

Received

AUG 21 REC'D
St. Joe Woodlands

WALTER B. SCOTT & SONS INC.
HC. 03 BOX 101
ST. MARIES, IDAHO 83861

August 22, 2000

INVOICE # 756

TO: POTLATCH CORPORATION
ST. MARIES, IDAHO 83861
ATT. GREG RAPP

July 2000

DON GREEN

TOTAL

<i>gR</i> AVERY OIL			
	1.5 DAYS	\$235.00 /DAY	\$352.50
ROAD MAINTENANCE			
	5 DAYS	\$235.00 /DAY	\$1,175.00
4 WHEELER			
	4 DAYS	\$15.00 /DAY	\$60.00
	160 MILES	\$0.38 /MILE	\$60.80

DONNELLA HULING

<i>gR</i> AVERY OIL			
	4 DAYS	\$150.00 /DAY	\$600.00
	200 MILES	\$0.38 /MILE	\$76.00
ROAD SIGNS			
INSTALL	6 DAYS	\$150.00 /DAY	\$900.00
SHOP	12 DAYS	\$150.00 /DAY	\$1,800.00
	830 MILES	\$0.38 /MILE	\$315.40

TOTAL DUE \$5,339.70

Avery Oil \$1028.50 gR



State of Idaho
DEPARTMENT OF WATER RESOURCES

NORTHERN REGION, Suite No. 210 • 1910 Northwest Blvd. • Coeur d'Alene, Idaho 83814-2615
(208) 769-1450 Fax (208) 769-1454

DIRK KEMPTHORNE
GOVERNOR

KARL J. DREHER
DIRECTOR

August 31, 2000

Received

SEP 05 REC'D
St. Joe Woodlands

Norm Linton
Area Manager
Potlatch Corporation
PO Box 386
St Maries ID 83861-0386

Re: 91-S-262

Dear Mr. Linton:

This office has reviewed your application for a Permit to Alter a Stream Channel and has prepared a decision as provided for under Section 42-3805 of the Idaho Code.

You may consider this letter as a permit to alter St. Joe River provided that the special conditions listed on page two and the general conditions listed below are adhered to.

GENERAL CONDITIONS:

1. This permit DOES NOT constitute any of the following:
 - A. An easement or right-of-way to trespass across or work upon property belonging to others.
 - B. Other approval that may be required by State or Federal Government, unless specifically stated in the special conditions below.
 - C. Responsibility of the Department of Water Resources for damage to adjacent properties due to work done.
 - D. Compliance with the Federal Flood Insurance Program, FEMA regulations or approval of the local Planning and Zoning Authority.
 - E. Authorization to take any threatened or endangered species, or the destroying or degrading of any critical habitat of any threatened or endangered species.
2. The permit holder or operator must have a copy of this permit at the alteration site and available for inspection at all times.
3. The Department of Water Resources may cancel this permit at any time if it is determined that the work creates an unacceptable adverse impact on the stream channel.

Norm Linton, Area Manager
Potlatch Corporation

August 31, 2000
Page Two

SPECIAL CONDITIONS:

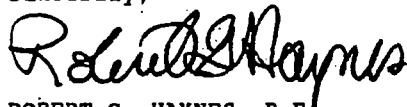
1. The riprap and barbs shall be installed in accordance with the Stream Channel Alteration Rules. [IDAPA 37.03.07 Rules 56, 57 & 59].
2. This also constitutes a permit from the Idaho Department of Lands for work in a navigable stream.
3. A permit may be required from the U. S. Army Corps of Engineers.
4. This permit expires on December 31, 2000.

CONDITIONS AND CONSTRUCTION PROCEDURES APPROVED UNDER THIS PERMIT MAY NOT COINCIDE WITH THE PROPOSAL AS SUBMITTED. FAILURE TO ADHERE TO CONDITIONS AS SET FORTH HEREIN CAN RESULT IN LEGAL ACTION AS PROVIDED FOR IN SECTION 42-3809, IDAHO CODE.

If you object to the decision issuing this permit with the general and specific conditions, you have fifteen days in which to notify this Department in writing that you request a formal hearing on the matter. If an objection has not been received within fifteen days, this decision will be final.

If you have any questions, please contact this office.

Sincerely,



ROBERT G. HAYNES, P.E.
Regional Manager

RGH:KK:db

Enc.

cc: IDFG, DEQ, COE



HARTCROWSER
Delivering smarter solutions

www.hartcrowser.com

September 5, 2000

Anchorage

Mr. Norm Linton
Area Manager
Potlatch Corporation
1100 Railroad Avenue
P.O. Box 386
St. Maries, Idaho 83861

Boston

Chicago

Re: Addendum No. 1 for Corrective Action Plan
Avery Landing Site
Avery, Idaho
J-2296-07

Denver

Dear Mr. Linton:

This report presents the information requested by Idaho Department of Environmental Quality (IDEQ), Fish and Wildlife, and Idaho Corps of Engineers after reviewing the Corrective Action Plan for Avery Landing Site in Avery, Idaho.

Fairbanks

General Clarifications

Jersey City

The expected duration of the project is 3 to 4 weeks. Work completed in the river is expected to last 2 to 3 weeks.

There will be four types of wells on site following the planned construction: 2-inch-diameter monitoring wells; 4-inch-diameter monitoring wells; 12-inch-diameter extraction wells; and 24 to 36-inch-diameter collection wells.

Juneau

When construction begins, the current water extraction system will be turned off to allow the use of the reinjection trench. The water extraction system will remain off after the containment wall is completed. Oil skimmer pumps will be left in place and used as needed to remove product in the extraction well.

Long Beach

Portland

Seattle

1910 Fairview Avenue East
Seattle, Washington 98102-3699
Fax 206.328.5581
Tel 206.324.9530

K 00095



SILT CONTROL AND CONTINGENCY SPILL PLAN

Clarification on Plastic Material to be Used on the Cofferdam

The plastic to be used to help seal the cofferdam will consist of 6-mil or greater reinforced polyethylene plastic, or 30-mil "Arctic Liner" PVC alloy material.

Clarification on Treatment of Dewatering Water

Water generated during dewatering activities will be run through an oil/water separator. The water will then be pumped to existing treatment system reinjection trench located across the road. Should the dewatering pumping rate be too great for complete reintroduction, a slipstream will be diverted through a rock ditch back to the river. This slipstream will have to meet a turbidity level of 25 NTU above background due to duration of the work (greater than 10 days). Should the slipstream be required, it will be monitored using a field turbidity meter. If the turbidity exceeds 20 NTU above background, work will be halted and other institutional controls implemented to ensure no water is discharge above the criteria.

WALL CONSTRUCTION

Clarification on the Locations of Additional Collection Wells

In addition to the five collection wells along the containment wall, collection wells will be installed in areas where the 4-inch-diameter monitoring wells that contain a depth of product more than 6 inches. At a minimum one collection well will be installed in the area of MW-11, where extremely thick product has historically been found.

LINER INSTALLATION

Clarification on Bedding Material

Bedding material to be placed above and below the geo-fabric and plastic liner will be fines, 3/4-inch minus, derived from screening the local soil.



RIPARIAN ZONE INSTALLATION

Clarification on Tree Root Migration

Tree roots will not penetrate a non-permeable layer. The root has to sense a water source for it to grow in a direction. Since the plastic liner that will be installed is non-permeable, root penetrations will not occur.

Clarification of Tree Type, Spacing, and Performance Criteria

Cottonwood trees will be planted on 10-foot centers with willow trees approximately every fifth tree. Though the organization of the trees to allow clustering may change the order of the trees, the ratio and number of trees will be consistent. A minimum of 14 willow and 56 cottonwood trees will be planted. In addition the shrubs recovered during removal activities will be planted among the trees. The riparian zone will be monitored to ensure at least an 80 percent survival rate after 3 years.

LONG-TERM SITE MONITORING

Clarification of Monitoring Locations, Frequency, and Action Levels

Monitoring for the first year will be completed monthly in all existing monitoring, extraction, and collection wells on the site. The data will be tabulated and presented in the yearly report that will recommend follow-on site monitoring. Potlatch is required to notify IDEQ and remove product from the wells when the product depth exceeds 6 inches in any collection well.

LIMITATIONS

Work for this project was performed, and this letter report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of Potlatch Corporation for specific application to the referenced property. This report is not meant to represent a legal opinion. No other warranty, express or implied, is made.

Any questions regarding our work and this response letter, the presentation of the information, and the interpretation of the data are welcome and should be referred to the undersigned.



Potlatch Corporation
September 5, 2000

J-2296-07
Page 4

We trust that this report meets your needs.

Sincerely,

HART CROWSER, INC.

TERRY W. MONTOYA
Project Manager

MATTHEW F. SCHULTZ, P.E.
Sr. Associate Chemical Engineer

F:\Docs\Jobs\229607\CorrectAddendum(ltr).doc

Potlatch

**Potlatch Corporation
Resource Management Group
Idaho Region**

St. Joe Area Woodlands
P.O. Box 386
St. Maries, Idaho 83861-0386
Telephone (208) 245-4146
Fax (208) 245-6421

September 7, 2000

**State of Idaho
Division of Environmental Quality
2110 Ironwood Parkway
Coeur d' Alene, ID 83814-2648**

Attention: Kreg Beck

RE: Addendum No. 1 for Corrective Action Plan – Avery Landing Site

Dear Kreg:

The addendum No. 1 for the Corrective Action Plan represents the information requested by the Idaho Division of Environmental Quality, U.S. Fish and Wildlife Service, and the Corps of Engineers. The addendum was prepared by our Environmental Engineering Consultant, Hart Crowser, Inc., and it is attached for your review and approval.

Kreg, if you have any questions feel free to call me at my St. Maries office.

Sincerely,



**Norm Linton
Area Manager**

**NL:sh
Attachment**

**cc: John Emery
: Greg Rapp
: Larry Bentcik
: Greg Rayner – Corps of Engineers
: Greg Weigel – U.S., EPA, Boise
: Rick Donaldson – U.S.F.W.S., Spokane
: Chip Corsi – IDFG, Coeur d' Alene
: Ken Knoblock – ID Dept. of Water Resources**

9/7/2000
x.c: FAX Gregg Raynor Corps of Engineers



HARTCROWSER
Delivering smarter solutions

www.hartcrowser.com

September 5, 2000

Anchorage

Mr. Norm Linton
Area Manager
Potlatch Corporation
1100 Railroad Avenue
P.O. Box 386
St. Maries, Idaho 83861

Boston

Chicago

Re: Addendum No. 1 for Corrective Action Plan
Avery Landing Site
Avery, Idaho
J-2296-07

Denver

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Juneau

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Long Beach

Portland

Seattle

1910 Fairview Avenue East
Seattle, Washington 98102-3699
Fax 206.328.5581
Tel 206.324.9530

K 00100



SILT CONTROL AND CONTINGENCY SPILL PLAN

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The plastic to be used to help seal the cofferdam will consist of 6-mil or greater reinforced polyethylene plastic, or 30-mil "Arctic Liner" PVC alloy material.

Clarification on Treatment of Dewatering Water

Water generated during dewatering activities will be run through an oil/water separator. The water will then be pumped to existing treatment system reinjection trench located across the road. Should the dewatering pumping rate be too great for complete reintroduction, a slipstream will be diverted through a rock ditch back to the river. This slipstream will have to meet a turbidity level of 25 NTU above background due to duration of the work (greater than 10 days). Should the slipstream be required, it will be monitored using a field turbidity meter. If the turbidity exceeds 20 NTU above background, work will be halted and other institutional controls implemented to ensure no water is discharge above the criteria.

WALL CONSTRUCTION

Clarification on the Locations of Additional Collection Wells

In addition to the five collection wells along the containment wall, collection wells will be installed in areas where the 4-inch-diameter monitoring wells that contain a depth of product more than 6 inches. At a minimum one collection well will be installed in the area of MW-11, where extremely thick product has historically been found.

LINER INSTALLATION

Clarification on Bedding Material

Bedding material to be placed above and below the geo-fabric and plastic liner will be fines, 3/4-inch minus, derived from screening the local soil.



RIPARIAN ZONE INSTALLATION

Clarification on Tree Root Migration

Tree roots will not penetrate a non-permeable layer. The root has to sense a water source for it to grow in a direction. Since the plastic liner that will be installed is non-permeable, root penetrations will not occur.

Clarification of Tree Type, Spacing, and Performance Criteria

Cottonwood trees will be planted on 10-foot centers with willow trees approximately every fifth tree. Though the organization of the trees to allow clustering may change the order of the trees, the ratio and number of trees will be consistent. A minimum of 14 willow and 56 cottonwood trees will be planted. In addition the shrubs recovered during removal activities will be planted among the trees. The riparian zone will be monitored to ensure at least an 80 percent survival rate after 3 years.

LONG-TERM SITE MONITORING

Clarification of Monitoring Locations, Frequency, and Action Levels

Monitoring for the first year will be completed monthly in all existing monitoring, extraction, and collection wells on the site. The data will be tabulated and presented in the yearly report that will recommend follow-on site monitoring. Potlatch is required to notify IDEQ and remove product from the wells when the product depth exceeds 6 inches in any collection well.

LIMITATIONS

Work for this project was performed, and this letter report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of Potlatch Corporation for specific application to the referenced property. This report is not meant to represent a legal opinion. No other warranty, express or implied, is made.

Any questions regarding our work and this response letter, the presentation of the information, and the interpretation of the data are welcome and should be referred to the undersigned.



Potlatch Corporation
September 5, 2000

J-2296-07
Page 4

We trust that this report meets your needs.

Sincerely,

HART CROWSER, INC.

TERRY W. MONTOYA
Project Manager

MATTHEW F. SCHULTZ, P.E.
Sr. Associate Chemical Engineer

F:\Docs\Jobs\229607\CorrectAddendum(ltr).doc



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
WALLA WALLA DISTRICT, CORPS OF ENGINEERS
COEUR D'ALENE REGULATORY OFFICE
U.S. FOREST SERVICE BLDG.
3815 SCHREIBER WAY
COEUR D'ALENE, IDAHO 83815-8363

Received
SEP 1 RECD
St. Joe Woodlands

September 12, 2000

Operations Division

SUBJECT: NWW No. 001200800, Idaho State No. 91-S-262

Mr. Norm Linton, Area Manager
Potlatch Corporation
P.O. Box 386
St. Maries, Idaho 83861-0386

Dear Mr. Linton:

This concerns your June 1, 2000 Joint Application for Permit to excavate contaminated soils along 800 feet of the right bank of the St. Joe River and to replace that material with clean soil and rock riprap. Your project is authorized under the terms and conditions of Nationwide Permit (NWP) 38 (33 CFR 330, Appendix A) subject to the enclosed list of conditions and the following special conditions:

a. Construction must be completed in accordance with the August 7, 2000 Corrective Action Plan by Hart Crowser Consultant, and Addendum dated September 5, 2000, and the additional measures detailed in your September 7, 2000 e-mail message to us.

b. Rock barbs must be designed to ensure they will not adversely impact the opposite and downstream river banks.

Please carefully review these conditions. If you cannot meet these conditions, this NWP verification is not valid. If you change the project description in your permit application, this NWP may not be valid and you should contact us before starting work. We have enclosed a Compliance Certification for you to sign and return when you have completed your project.

Our verification under NWP 38 is valid until February 11, 2002 when this NWP is scheduled to be modified, reissued, or revoked. You will need to keep informed of any changes to this NWP if your work will extend beyond this date. We plan to issue a public notice announcing any changes to the NWPs. You may also obtain information by calling us or visiting our Regulatory Homepage at:
<http://www.nww.usace.army.mil/html/offices/op/rf/rfhome.htm> If you

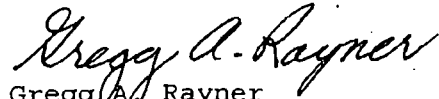
start or are under contract to start this activity by February 11, 2002, you will have an additional 12 months to complete the activity under the present terms and conditions of this NWP.

This determination applies only to Department of the Army permits administered by the Corps of Engineers. Your project may also require permits from other Federal, state, and local agencies. A permit may be required from the Idaho Department of Water Resources for your project. You should contact them to obtain any necessary permits prior to the start of construction.

A local floodplain management ordinance may have been adopted by your local city or county zoning office under the National Flood Insurance Program. You should contact them regarding any approvals or permits they may require for your project.

Please contact me at 208-765-7256 if you have any questions.

Sincerely,



Gregg A. Rayner
Regulatory Project Manager

Enclosures

Copies Furnished:

Idaho Department of Water Resources
Northern Region
1910 Northwest Boulevard, Suite 210
Coeur d'Alene, Idaho 83814-9255

Gwen Fransen, Regional Administrator
Idaho Department of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, Idaho 83814

NATIONWIDE PERMIT 38

CLEANUP OF HAZARDOUS AND TOXIC WASTE. Specific activities required to effect the containment, stabilization or removal of hazardous or toxic waste materials that are performed, ordered, or sponsored by a government agency with established legal or regulatory authority provided the permittee notifies the district engineer in accordance with the "Notification" general condition. For discharges in special aquatic sites, including wetlands, the notification must also include a delineation of affected special aquatic sites, including wetlands. Court ordered remedial action plans or related settlements are also authorized by this nationwide permit. This nationwide permit does not authorize the establishment of new disposal sites or the expansion of existing sites used for the disposal of hazardous or toxic waste. (Sections 10 and 404)

Regional Conditions - *None.*

Water Quality Certification - *Issued with the following condition.*

This NWP only applies to cleanup activities authorized by the IDEQ.

General Conditions. *General Conditions 10, 13, 17, 25, and 26 are abbreviated. A complete set of Nationwide Permit General Conditions and definitions is located on our Internet homepage at www.nwww.usace.army.mil/html/offices/op/rf/rfhome.htm.*

The following general conditions must be followed in order for any authorization by an NWP to be valid:

- 1. **Navigation.** No activity may cause more than a minimal adverse effect on navigation.*
- 2. **Proper Maintenance.** Any structure or fill authorized shall be properly maintained, including maintenance to ensure public safety.*
- 3. **Soil Erosion and Sediment Controls.** Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date.*
- 4. **Aquatic Life Movements.** No activity may substantially disrupt the movement of those species of aquatic life indigenous to the waterbody, including those species which normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.*

5. **Equipment.** Heavy equipment working in wetlands must be placed on mats, or other measures must be taken to minimize soil disturbance.
6. **Regional and Case-By-Case Conditions.** The activity must comply with any regional conditions which may have been added by the division engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the State or tribe in its Section 401 water quality certification and Coastal Zone Management Act consistency determination.
7. **Wild and Scenic Rivers.** No activity may occur in a component of the National Wild and Scenic River System; or in a river officially designated by Congress as a "study river" for possible inclusion in the system, while the river is in an official study status; unless the appropriate Federal agency, with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation, or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).
8. **Tribal Rights.** No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.
9. **Water Quality.**
 - a. In certain States and tribal lands an individual 401 water quality certification must be obtained or waived (See 33 CFR 330.4(c)).
 - b. For NWPs 12, 14, 17, 18, 32, 39, 40, 42, 43, and 44, where the State or tribal 401 certification (either generically or individually) does not require or approve a water quality management plan, the permittee must include design criteria and techniques that will ensure that the authorized work does not result in more than minimal degradation of water quality. An important component of a water quality management plan includes stormwater management that minimizes degradation of the downstream aquatic system, including water quality. Refer to General Condition 21 for stormwater management requirements. Another important component of a water quality management plan is the establishment and maintenance of vegetated buffers next to open waters, including streams. Refer to General Condition 19 for vegetated buffer requirements for the NWPs.
10. **Coastal Zone Management.** Does not apply in Idaho.
11. **Endangered Species.**
 - a. No activity is authorized under any NWP which is likely to jeopardize the

continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act, or which will destroy or adversely modify the critical habitat of such species. Non-federal permittees shall notify the District Engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or is located in the designated critical habitat and shall not begin work on the activity until notified by the District Engineer that the requirements of the Endangered Species Act have been satisfied and that the activity is authorized. For activities that may affect Federally-listed endangered or threatened species or designated critical habitat, the notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. As a result of formal or informal consultation with the FWS or NMFS, the District Engineer may add species-specific regional endangered species conditions to the NWP.

- b. Authorization of an activity by a nationwide permit does not authorize the "take" of a threatened or endangered species as defined under the Federal Endangered Species Act. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, both lethal and non-lethal "takes" of protected species are in violation of the Endangered Species Act. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. Fish and Wildlife Service and National Marine Fisheries Service or their world wide web pages at <http://www.fws.gov/r9endspp/endspp.html> and http://www.nfms.gov/prot_res/esahome.html, respectively.*

- 12. Historic Properties.** *No activity which may affect historic properties listed, or eligible for listing, in the National Register of Historic Places is authorized, until the DE has complied with the provisions of 33 CFR part 325, Appendix C. The prospective permittee must notify the District Engineer if the authorized activity may affect any historic properties listed, determined to be eligible, or which the prospective permittee has reason to believe may be eligible for listing on the National Register of Historic Places, and shall not begin the activity until notified by the District Engineer that the requirements of the National Historic Preservation Act have been satisfied and that the activity is authorized. Information on the location and existence of historic resources can be obtained from the State Historic Preservation Office and the National Register of Historic Places (see 33 CFR 330.4(g)). For activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the notification must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property.*

13. **Notification.** *This general condition is satisfied.*
14. **Compliance Certification.** *Every permittee who has received a Nationwide permit verification from the Corps will submit a signed certification regarding the completed work and any required mitigation. The certification will be forwarded by the Corps with the authorization letter. The certification will include: (a) A statement that the authorized work was done in accordance with the Corps authorization, including any general or specific conditions; (b) A statement that any required mitigation was completed in accordance with the permit conditions; and (c) The signature of the permittee certifying the completion of the work and mitigation.*
15. **Use of Multiple Nationwide Permits.** *The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3 acre.*
16. **Water Supply Intakes.** *No activity, including structures and work in navigable waters of the United States or discharges of dredged or fill material, may occur in the proximity of a public water supply intake except where the activity is for repair of the public water supply intake structures or adjacent bank stabilization.*
17. **Shellfish Beds.** *Does not apply in Idaho.*
18. **Suitable Material.** *No activity, including structures and work in navigable waters of the United States or discharges of dredged or fill material, may consist of unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.) and material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).*
19. **Mitigation.** *The project must be designed and constructed to avoid and minimize adverse effects to waters of the United States to the maximum extent practicable at the project site (i.e., on site). Mitigation will be required when necessary to ensure that the adverse effects to the aquatic environment are minimal. The District Engineer has considered the remaining factors discussed in this General Condition and determined that the mitigation, as proposed, will offset adverse effects on the aquatic environment that are more than minimal.*
20. **Spawning Areas.** *Activities, including structures and work in navigable waters of the United States or discharges of dredged or fill material, in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g.,*

excavate, fill, or smother downstream by substantial turbidity) of an important spawning area are not authorized.

21. **Management of Water Flows.** *To the maximum extent practicable, the activity must be designed to maintain preconstruction downstream flow conditions (e.g., location, capacity, and flow rates). Furthermore, the activity must not permanently restrict or impede the passage of normal or expected high flows (unless the primary purpose of the fill is to impound waters) and the structure or discharge of dredged or fill material must withstand expected high flows. The activity must, to the maximum extent practicable, provide for retaining excess flows from the site, provide for maintaining surface flow rates from the site similar to preconstruction conditions, and must not increase water flows from the project site, relocate water, or redirect water flow beyond preconstruction conditions. In addition, the activity must, to the maximum extent practicable, reduce adverse effects such as flooding or erosion downstream and upstream of the project site, unless the activity is part of a larger system designed to manage water flows.*
22. **Adverse Effects From Impoundments.** *If the activity, including structures and work in navigable waters of the United States or discharge of dredged or fill material, creates an impoundment of water, adverse effects on the aquatic system caused by the accelerated passage of water and/or the restriction of its flow shall be minimized to the maximum extent practicable.*
23. **Waterfowl Breeding Areas.** *Activities, including structures and work in navigable waters of the United States or discharges of dredged or fill material, into breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.*
24. **Removal of Temporary Fills.** *Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting elevation.*
25. **Designated Critical Resource Waters.** *This general condition is satisfied.*
26. **Fills Within 100-Year Floodplains.** *This general condition is satisfied.*

Further Information

1. *District engineers have authority to determine if an activity complies with the terms and conditions of an NWP.*
2. *NWPs do not obviate the need to obtain other Federal, State, or local permits, approvals, or authorizations required by law.*
3. *NWPs do not grant any property rights or exclusive privileges.*
4. *NWPs do not authorize any injury to the property or rights of others.*
5. *NWPs do not authorize interference with any existing or proposed Federal project.*

Compliance Certification

Department of the Army Permit Number: 001200800

Name of Permittee: Potlatch Corporation

Date of Issuance: September 11, 2000

Sign and return this Compliance Certification when you complete the project authorized by this permit and any required mitigation. Return this certification to:

Corps of Engineers, c/o U.S. Forest Service, 3815 Schreiber Way, Coeur d'Alene, ID 83815

Please note that your permitted activity is subject to a compliance inspection by a representative of the U.S. Army Corps of Engineers. If you fail to comply with this permit, the permit is subject to suspension, modification, or revocation.

I hereby certify the work authorized by my permit is completed according to the required terms and conditions and complies with the required mitigation.

Signature of Permittee

December 15, 2000

Mr. Norm Linton
Potlatch Corporation
1100 Railroad Avenue
P.O. Box 386
St. Maries, Idaho 83861

Received
DEC 26 2000
St. Joe Woodlands

Anchorage

Boston

Chicago

Denver

Fairbanks

Jersey City

Juneau

Long Beach

Portland

Seattle

**Re: Remediation System Installation and Third Quarter 2000 Performance Report
Avery Landing Recovery System
J-2296-07**

Dear Mr. Linton:

Hart Crowser is pleased to present the Remediation System Installation and Third Quarter 2000 Performance Report for the Avery Landing free product recovery system. This letter report presents a summary of our remediation system installation during September 2000, and third quarter groundwater elevations and product thickness measurements.

REMEDICATION SYSTEM INSTALLATION

The containment wall and six product collection wells were installed in September and October 2000. Slotted monitoring well casings were installed in the collection wells for free product and groundwater elevation measurement, as well as free product recovery. Figure 1 depicts the location of the containment wall and collection wells. Test pit wells installed during the site characterization are also depicted on Figure 1.

GROUNDWATER AND PRODUCT QUARTERLY MONITORING

Twelve test pit wells (TP-1 through TP-12), two monitoring wells (HC-4 and HC-5), and five collection wells (CW-1 through CW-5) were monitored on September 21, 2000, prior to the installation of the containment wall. Well, piezometer, and test pit locations are shown on Figure 1. At each monitoring location, depth to product and depth to groundwater measurements were performed using a Solinist, a free-product measuring device. River elevations were not measured because of the presence of the temporary cofferdam placed for the containment wall installation.



Potlatch Corporation
December 15, 2000

J-2296-07
Page 2

The extraction well operation will no longer be monitored on a quarterly basis. Instead, the system will be evaluated based on free-product measurements across the site and the amount of free product removed from the collection wells.

FREE PRODUCT RECOVERY

The approximate total product removed by the previous system is 775 gallons. The first measurement for product contained by the containment wall system will be performed during the monitoring event in December. Potlatch will continue to monitor product depth in wells on-site on a monthly basis. If any of the collection wells have a product depth of 6 inches or more IDEQ will be notified and arrangements for removal will be completed.

PROJECT SCHEDULE

In November 2001, Potlatch will provide a report documenting monthly product measurements for the year. Additionally Potlatch will provide a proposed schedule for long-term monitoring and free-product removal activities.

LIMITATIONS

Work for this project was performed, and this letter report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar location, at the time the work was performed. It is intended for the exclusive use of the Potlatch Corporation for specific application to the referenced property.



Pottlatch Corporation
December 15, 2000

J-2296-07
Page 3

If additional information or clarification is required, please call Terry Montoya at
(206) 324-9530.

Sincerely,

HART CROWSER, INC.

DALLAS HOOVER
Senior Staff Remediation Engineer

TERRY MONTOYA
Associate Remediation Engineer

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Attachments:

Table 1 - Avery Landing Groundwater and River Monitoring Data

Figure 1 - Avery Landing Third Quarter 2000 Groundwater Flow Direction Map

cc: Kreg Beck, Idaho Department of Environmental Quality

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 1 of 7

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
EW-1	10/27/1994	ND	11	0	95.34	84.34
	6/30/1995	ND	10.9	0	95.34	84.44
	9/21/95	11.25	11.27	0.02	95.34	84.07
	7/11/1996	ND	9.74	0	95.34	85.60
	9/11/1996	ND	10.88	0	95.34	84.46
	11/5/1996	ND	11.94	0	95.34	83.40
	7/17/1997	ND	10.38	0	95.34	84.96
	10/9/1997	ND	13.17	0	95.34	82.17
	6/25/1998	ND	10.01	0	95.34	85.33
	8/12/1998	NM	10.52	0	95.34	84.82
	10/22/1998	Sheen	10.86	0	95.34	84.48
	3/18/1999			0	95.34	85.57
	6/22/1999	ND	11.68	0	95.34	83.66
	9/16/1999	ND	10.72	0	95.34	84.62
	12/2/1999	ND	9.78	0	95.34	85.56
	3/30/2000	ND	9.03	0	95.34	86.31
	9/21/2000	ND	10.86	0	95.34	84.48
EW-2	10/27/1994	ND	10.37	0	95.24	84.87
	6/30/1995	10.57	10.89	0.32	95.24	84.35
	9/21/95	13.9	13.92	0.02	95.24	81.32
	7/11/1996	11.03	11.66	0.63	95.24	83.58
	9/11/1996	Sheen	14.00	0	95.24	81.24
	11/5/1996	Sheen	12.27	0	95.24	82.97
	7/17/1997	8.99	9.09	0.1	95.24	86.15
	10/9/1997	Sheen	15.44	0	95.24	79.80
	6/25/1998	9.19	9.64	0.45	95.24	85.60
	8/12/1998	NM	9.99	0	95.24	85.25
	10/22/1998	Sheen	10.94	0	95.24	84.30
	3/18/1999	10.17	10.27	0.1	95.24	84.97
	6/22/1999	11.3	11.31	0.01	95.24	83.93
	9/16/1999	15.32	15.35	0.03	95.24	79.89
	12/2/1999	9.91	10.1	0.19	95.24	85.14
	3/30/2000	9.5	10.29	0.79	95.24	84.95
	6/14/2000	8.89	9.39	0.5	95.24	85.85
	9/21/2000	ND	10.54	0	95.24	84.70
EW-3	10/27/1994	ND	10.05	0	95.78	85.73
	6/30/1995	9.35	9.8	0.45	95.78	85.98
	9/21/95	10.92	11.08+	0.16	95.78	84.70
	7/11/1996	8.53	8.64	0.11	95.78	87.14
	9/11/1996	10.75	11.70	0.95	95.78	84.08
	11/5/1996	Sheen	11.8	0	95.78	83.98
	7/17/1997	9.13	9.33	0.2	95.78	86.45
	10/9/1997	10.9	11.68	0.78	95.78	84.10

229607\3rdQu00REV1.xls - Monitoring Results

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 2 of 7

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
	6/25/1998	8.78	9.43	0.65	95.78	86.35
	8/12/1998	ND	11	0	95.78	84.78
	10/22/1998	12.58	13.38	0.8	95.78	82.40
	3/18/1999	9.03	9.23	0.2	95.78	86.55
	6/22/1999	11.1	11.25	0.15	95.78	84.53
	9/16/1999	10.76	11.06	0.3	95.78	84.72
	12/2/1999	9.04	9.1	0.06	95.78	86.68
	3/30/2000	ND	9.08	0	95.78	86.70
	6/14/2000	ND	7.68	0	95.78	88.10
	9/21/2000	10.58	10.88	0.3	95.78	84.90
EW-4	10/27/1994	ND	8.05	0	94.32	86.27
	6/30/1995	7.84	7.85	0.01	94.32	86.47
	9/21/95	8.22	8.24	0.02	94.32	86.08
	7/11/1996	Sheen	6.44	0	94.32	87.88
	11/5/1996	Sheen	8.08	0	94.32	86.24
	7/17/1997	Sheen	5.43	0	94.32	88.89
	10/9/1997	Sheen	7.11	0	94.32	87.21
	6/25/1998	5.28	5.3	0.02	94.32	89.02
	8/12/1998	NM	8.98	0	94.32	85.34
	10/22/1998	ND	8.98	0	94.32	85.34
	3/18/1999	5.18	5.26	0	94.32	89.06
	6/22/1999	Sheen	9	0	94.32	85.32
	9/16/1999	8.45	9.27	0.82	94.32	85.05
	12/2/1999	7.31	7.36	0.05	94.32	86.96
	3/30/2000	Sheen	6.5	0	94.32	87.82
	6/14/2000	ND	4.69	0	94.32	89.63
	9/21/2000	7.98	8.88	0.9	94.32	85.44
HC-1	10/27/1994	ND	13.25	0	97.50	84.25
	6/30/1995	ND	12.00	0	97.50	85.50
	9/21/95	NM	13.42	0	97.50	84.08
	7/11/1996	ND	11.92	0	97.50	85.58
	9/11/1996	ND	12.90	0	97.50	84.60
	11/5/1996	Could not locate due to snow				
	7/17/1997	ND	11.27	0	97.50	86.23
	10/9/1997	ND	12.87	0	97.50	84.63
	6/25/1998	ND	11.85	0	97.50	85.65
	8/12/1998	NM	12.97	0	97.50	84.53
	10/22/1998	ND	13.1	0	97.50	84.40
	3/18/1999	ND	11.7	0	97.50	85.80
	6/22/1999	ND	9.28	0	97.50	88.22
	9/16/1999	ND	12.98	0	97.50	84.52
	12/2/1999	Well Under Standing Water				
	3/30/2000	ND	11.24	0	97.50	86.26
	6/14/2000	ND	10.73	0	97.50	86.77
	9/21/2000	ND	13.05	0	97.50	84.45

229607\3rdQtr00REV1.xls - Monitoring Results

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 3 of 7

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
HC-4	10/27/1994	13.3	15.34	2.04	98.94	83.60
	6/30/1995	11.89	15.49	3.6	98.94	83.45
	9/21/95	13.67	NM	NM	98.94	85.27
	7/11/1996	11.58	12.93	1.35	98.94	86.01
	9/11/1996	13.53	13.93	0.40	98.94	85.01
	11/5/1996	11.82	13.62	1.80	98.94	85.32
	7/17/1997	11.65	13.25	1.60	98.94	85.69
	10/9/1997	12.67	14.92	2.25	98.94	84.02
	6/25/1998	11.53	12.49	0.96	98.94	86.45
	8/12/1998	NM	13.9	NM	98.94	85.04
	10/22/1998	10.3	14.7	4.40	98.94	84.24
	3/18/1999	10.5	14.05	4.45	98.94	84.89
	6/22/1999	16.9	13.9	4.00	98.94	85.04
	9/16/1999	15.89	17.57	1.68	98.94	81.37
	12/2/1999	Not Measured				
	3/30/2000	10.68	11.70	1.02	98.94	87.24
	6/14/2000	10.41	10.92	0.51	98.94	88.02
	9/21/2000	13	13.4	0.4	98.94	85.54
HC-5	11/5/1996	ND	11.22	0	97.95	86.73
	7/17/1997	Monument under standing water				
	10/9/1997	Monument under standing water				
	6/25/1998	Lost during road construction				
	6/14/2000	ND	7.71	0	97.95	90.24
	9/21/2000	ND	17.95	0	104.66	86.71
MW-4	9/14/94	ND	12.88	0	99.76	86.88
	6/30/95	ND	10.19	0	99.76	89.57
	9/21/95	ND	11.95	0	99.76	87.81
	7/11/1996	Sheen	10.18	0	99.76	89.58
	9/11/1996	Sheen	11.33	0	99.76	88.43
	11/5/1996	Lost during road construction				
MW-5	10/27/1994	ND	10.45	0	97.76	87.31
	6/30/1995	ND	9.13	0	97.76	88.63
	9/21/95	ND	10.83	0	97.76	86.93
	7/11/1996	ND	8.98	0	97.76	88.78
	9/11/1996	ND	10.71	0	97.76	87.05
	11/5/1996	ND	10.65	0	97.76	87.11
	7/17/1997	ND	8.75	0	97.76	89.01
	10/9/1997	ND	10.89	0	97.76	86.87
	6/25/1998	ND	8.56	0	97.76	89.20
	8/12/1998	NM	10.68	0	97.76	87.08
	10/22/1998	ND	13.5	0	97.76	84.26
	3/18/1999	ND	8.8	0	97.76	88.96
	6/22/1999	ND	6.44	0	97.76	91.32

229607\3rdQtr00REV1.xls - Monitoring Results

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 4 of 7

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
	9/16/1999	ND	10.8	0	97.76	86.96
	12/2/1999	ND	9.82	0	97.76	87.94
	3/30/2000	ND	8.39	0	97.76	89.37
	6/14/2000	ND	9.07	0	97.76	88.69
	9/21/2000	ND	10.65	0	97.76	87.11
MW-11	9/14/94	12	NA	NA	98.16	NA
	6/30/95	5.54	7.25	1.71	98.16	90.41
	7/11/1996	6.34	10.00	3.66	98.16	88.16
	9/11/1996	3.25	7.20	3.95	98.16	90.96
	11/5/1996	3.05	7.20	4.15	98.16	90.96
	7/17/1997	6.33	9.99	3.66	98.16	88.17
	8/12/1998	NM	3.90	NM	98.16	94.26
	10/22/1998	6.96	8.00	1.04	98.16	90.16
	9/16/1999	Not Measured				
	12/2/1999	6.9	7.37	0.47	98.16	90.79
	3/30/2000	7.33	7.82	0.49	98.16	90.34
	6/14/2000	8.2	10.95	2.75	98.16	87.21
P-1	10/27/1994	ND	17.31	0	101.42	84.11
	6/30/1995	ND	16.72	0	101.42	84.70
	9/21/95	ND	17.4	0	101.42	84.02
	7/11/1996	ND	15.87	0	101.42	85.55
	9/11/1996	ND	16.98	0	101.42	84.44
	11/5/1996	ND	17.06	0	101.42	84.36
	7/17/1997	ND	15.34	0	101.42	86.08
	10/9/1997	ND	17.64	0	101.42	83.78
	6/25/1998	ND	14.53	0	101.42	86.89
	8/12/1998	NM	16.72	0	101.42	84.70
	10/22/1998	ND	15.6	0	101.42	85.82
	3/18/1999	ND	15.65	0	101.42	85.77
	6/22/1999	ND	13	0	101.42	88.42
	9/16/1999	ND	16.84	0	101.42	84.58
	12/2/1999	ND	15.93	0	101.42	85.49
	3/30/2000	ND	15.14	0	101.42	86.28
	6/14/2000	ND	14.49	0	101.42	86.93
	9/21/2000	Piezometer removed during construction of new containment wall				
P-2	10/27/1994	ND	15.87	0	100.06	84.19
	6/30/1995	ND	15.26	0	100.06	84.80
	9/21/95	ND	16.04	0	100.06	84.02
	7/11/1996	ND	14.52	0	100.06	85.54
	9/11/1996	ND	15.62	0	100.06	84.44
	11/5/1996	ND	15.08	0	100.06	84.98
	7/17/1997	ND	13.92	0	100.06	86.14
	10/9/1997	ND	16.09	0	100.06	83.97
	6/25/1998	ND	15.95	0	100.06	84.11

229607\3rdQtr00REV1.xls - Monitoring Results

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 5 of 7

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
	8/12/1998	NM	15.3	0	100.06	84.76
	10/22/1998	NM	16.95	0	100.06	83.11
	3/18/1999	NM		0	100.06	86.02 ****
	6/22/1999	ND	11.65	0	100.06	88.41
	9/16/1999	ND	15.46	0	100.06	84.60
	12/2/1999	ND	14.55	0	100.06	85.51
	3/30/2000	ND	13.79	0	100.06	86.27
	6/14/2000	ND	13.13	0	100.06	86.93
	9/21/2000	Piezometer removed during construction of new containment wall.				
River at EW-1	10/27/1994					83.12 *
	6/30/1995					84.03 **
	9/21/95					82.24
	7/11/1996					83.74 ***
	9/11/1996					82.56
	11/5/1996					83.16
	7/17/1997					82.39
	10/9/1997					83.00
	6/25/1998					85.22
	8/12/1998					85.42
	10/22/1998					85.00
	3/18/1999					83.93
	6/22/1999					83.93
	9/16/1999					78.28
	12/299					78.28
	3/30/2000					84.93
River at EW-2	10/27/1994					84.41
	6/30/1995					85.32
	9/21/95					83.53
	7/11/1996					85.03
	9/11/1996					83.85
	11/5/1996					83.59
	7/17/1997					85.35
	10/9/1997					84.20
	6/25/1998					86.42
	8/12/1998					86.62
	10/22/1998					86.20
	3/18/1999					85.13
	6/22/1999					85.13
	9/16/1999					79.48
	12/2/1999					84.17
	3/30/2000					86.13
River at EW-3	10/27/1994					85.16 *
	6/30/1995					86.07
	9/21/95					84.28
	7/11/1996					85.78 ***

229607\3rdQtr00REV1.xls - Monitoring Results

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 6 of 7

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
	9/11/1996					84.60
	11/5/1996					84.10
	7/17/1997					86.31
	10/9/1997					85.16
	6/25/1998					85.16
	8/12/1998					85.65
	10/22/1998					85.23
	3/18/1999					86.10
	6/22/1999					89.45
	9/16/1999					85.29
	12/2/1999					85.13
	3/30/2000					87.09
River at EW-4	10/27/1994					86.49 *
	6/30/1995					87.40
	9/21/95					85.61
	7/11/1996					87.11 ***
	9/11/1996					85.93
	11/5/1996					86.44
	7/17/1997					87.27
	10/9/1997					86.12
	6/25/1998					88.34
	8/12/1998					88.54
	10/22/1998					88.12
	3/18/1999					87.05
	6/22/1999					90.40
	9/16/1999					86.89
	12/2/1999					86.09
	3/30/2000					88.07
TP-1 (2")	6/14/2000	13.24	13.75	0.51	103.65	89.90
	9/21/2000	18.81	19.45	0.64	103.65	84.20
TP-1 (4')	6/14/2000	13.7	13.74	0.04	104.25	90.51
	9/21/2000	ND	18.39	0	104.25	85.86
TP-2	6/14/2000	Sheen	13.12	0	96.04	82.92
	9/21/2000	ND	DRY	0	96.04	
TP-3	6/14/2000	Sheen	14.11	0	97.34	83.23
	9/21/2000	ND	DRY	0	97.34	
TP-5	6/14/2000	Sheen	13.57	0	97.83	84.26
	9/21/2000	ND	11.73	0	97.83	86.59
TP-6	6/14/2000	12.39	12.41	0.02	96.66	84.25
	9/21/2000	ND	9.84	0	96.66	86.82

229607\3rdQtr00REV1.xls - Monitoring Results

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 7 of 7

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
TP-7	6/14/2000	Sheen	11.95	0	96.08	84.13
	9/21/2000	ND	10.3	0	96.08	85.78
TP-8	6/14/2000	ND	14.63	0	97.2	82.57
	9/21/2000	ND	DRY	0	97.2	
TP-9	6/14/2000	ND	15.5	0	97.28	81.78
	9/21/2000	ND	DRY	0	97.28	
TP-10	6/14/2000	Sheen	15.35	0	96.56	81.21
	9/21/2000	ND	11.09	0	96.56	85.47
TP-11	6/14/2000	ND	15.3	0	96.36	81.06
	9/21/2000	ND	10.84	0	96.36	85.52
TP-12	6/14/2000	Sheen	12.49	0	95.9	83.41
	9/21/2000	ND	10.12	0	95.9	85.78
CW-1	9/21/2000	ND	14.44	0	TOC modified	
CW-2	9/21/2000	ND	15.11	0	TOC modified	
CW-3	9/21/2000	ND	13.15	0	TOC modified	
CW-4	9/21/2000	ND	12.1	0	TOC modified	
CW-5	9/21/2000	ND	12.71	0	TOC modified	
CW-6	9/21/2000	Not Installed at time of measurement				

Notes:

All measurements in feet.

* River elevation was extrapolated from the river surface slope measured in 1995 and the river elevation measured south of EW-2 in 1994.

** River elevation was extrapolated from river surface slope, based on river elevations measured south of EW-2, EW-3, and EW-4 in 1995.

*** River elevation was extrapolated from river surface slope, and the wood dock benchmark.

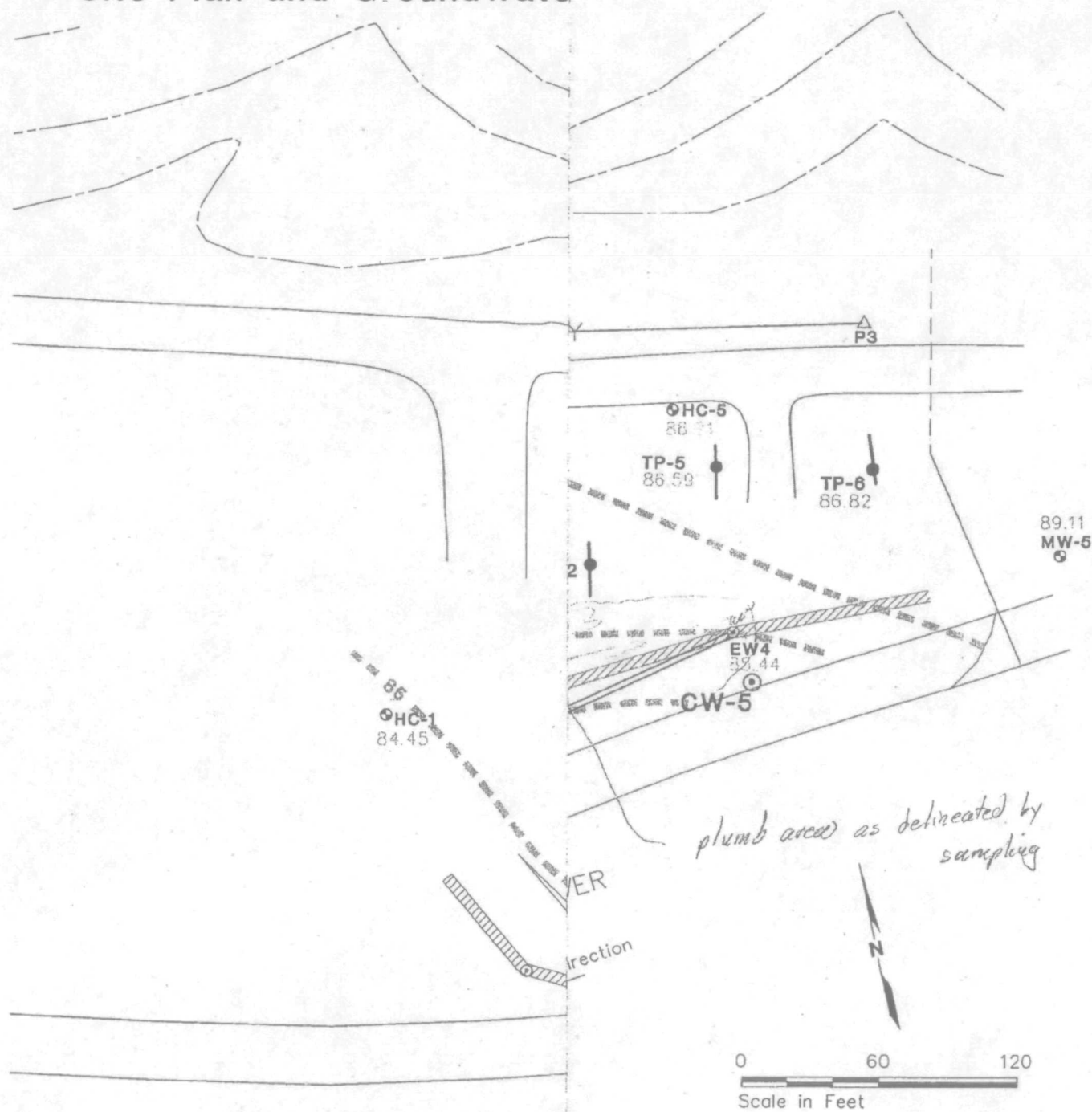
T.O.C. - Top of Casing

ND - Not Detected

NA - Not Available

NM - Not Measured

Site Plan and Groundwater



Exploration Location and Name

- MW-4 Monitoring Well
- EW1 Extraction Well
- △ P1 Piezometer
- HC-5 Lost During Construction



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J-2296-07 12/00

Figure 1

Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
CW-1	11/08/00	-	14.51	-	To water - no oil
	12/04/00	-	13.92	-	To water - sheen
	01/16/01	-	13.82	-	Depth to water light sheen
	02/15/01	-	13.46	-	To water - light sheen
	03/16/01	-	13.85	-	To water - light sheen visible
	04/18/01	-	13.70	-	To water - sheen
	05/15/01	-	10.58	-	To water - light sheen visible
	06/20/01	-	13.21	-	To water - light sheen visible
	07/24/01	-	14.12	-	To water - light sheen visible
	08/21/01	-	14.43	-	To water - light sheen present
	09/28/01	-	14.69	-	To water - light sheen
	10/03/01	-	13.75	-	To water - light sheen (15.7 to bottom)
CW-2	11/08/00	-	15.31	-	To water - oil not measurable - sheen
	12/04/00	-	14.74	-	To water - sheen
	01/16/01	-	14.62	-	To water - light sheen
	02/15/01	-	14.30	-	To water - light sheen
	03/16/01	-	14.68	-	To water - light sheen
	04/18/01	-	14.45	-	
	05/15/01	-	11.41	-	To water - light sheen visible
	06/20/01	-	14.01	-	To water - light sheen
	07/24/01	-	14.95	-	To water - light sheen visible
	08/21/01	-	15.23	-	To water - light sheen/rust
	09/28/01	-	15.41	-	To water - light sheen
	10/03/01	-	14.55	-	To water - light sheen (15.85 to bottom)
CW-3	11/08/00	-	13.30	-	To water - no oil
	12/04/00	-	11.81	-	To water - very light sheen
	01/16/01	-	12.35	-	To water - light sheen
	02/15/01	-	12.10	-	To water - light sheen
	03/16/01	-	12.73	-	To water - light sheen
	04/18/01	-	12.35	-	To water - sheen
	05/15/01	-	8.80	-	To water - light sheen
	06/20/01	-	11.87	-	To water - light sheen
	07/24/01	-	12.81	-	To water - light sheen visible
	08/21/01	-	13.18	-	To water - light sheen visible
	09/28/01	-	13.38	-	To water - light sheen, some rust
	10/03/01	-	12.40	-	To water - light sheen (16.1 to bottom)
CW-4	11/08/00	-	12.51	-	To water - sheen visible
	12/04/00	-	11.20	-	To water - sheen
	01/16/01	-	11.56	-	To water - light sheen
	02/15/01	-	11.52	-	To water - light sheen
	03/16/01	-	11.88	-	To water - very light sheen
	04/18/01	-	11.50	-	To water - sheen
	05/15/01	-	8.24	-	To water - very light sheen
	06/20/01	-	10.93	-	To water - light sheen
	07/24/01	-	11.89	-	To water - rusty sheen present
	08/21/01	-	12.40	-	To water - rusty sheen present
	09/28/01	-	12.71	-	To water - rusty sheen
	10/03/01	-	10.83	-	To water - clean (15.60 to bottom)
CW-5	11/08/00	-	12.85	-	To water - oil not measurable - sheen
	12/04/00	-	11.91	-	To water - no measurable oil - sheen
	01/16/01	-	11.81	-	To water - light sheen
	02/15/01	-	11.41	-	To water - light sheen
	03/16/01	-	11.83	-	To water - very light sheen

Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
CW-5 (Continued)	04/18/01	-	11.18	-	To water - sheen
	05/15/01	-	8.50	-	To water - light sheen
	06/20/01	-	11.10	-	To water - very light sheen
	07/24/01	-	12.41	-	To water - light sheen
	08/21/01	-	12.83	-	To water
	09/28/01	-	13.39	-	To water - very light sheen
	10/03/01	-	11.78	-	To water - very light sheen (15.30 to bottom)
CW-6	11/08/00	-	18.21	-	To water - sheen
	12/04/00	-	17.35	-	To water - sheen
	01/16/01	-	17.33	-	To water - light sheen
	02/15/01	-	17.11	-	To water - light sheen
	03/16/01	-	17.26	-	To water - light sheen
	04/18/01	-	17.14	-	To water - sheen
	05/15/01	-	14.11	-	Visible thin layer of oil
	06/20/01	-	16.70	-	Visible thin layer of oil
	07/24/01	-	17.68	-	To water - visible thin layer of oil
	08/21/01	-	18.13	-	To water - visible thin layer of oil
EW-1	09/28/01	-	18.42	-	To water - thin layer of oil
	10/03/01	-	17.33	-	To water - thin layer of oil (19.70 to bottom)
	11/08/00	-	15.91	-	To water - sheen visible
	12/04/00	-	15.30	-	To water - light sheen
	01/16/01	-	15.39	-	To water - light sheen
	02/15/01	-	15.08	-	To water - light sheen
	03/16/01	-	15.45	-	To water
	04/18/01	-	15.45	-	To water - light sheen
	05/15/01	-	12.21	-	To water
	06/20/01	-	14.84	-	To water
EW-2	07/24/01	-	15.68	-	To water
	08/21/01	-	18.08	-	To water - light sheen
	09/28/01	-	16.34	-	To water - light sheen
	10/03/01	-	15.38	-	To water - light sheen (21.4 to bottom)
	11/08/00	-	15.25	-	To water - heavy sheen
	12/04/00	14.19	Can't determine	-	Can't determine oil depth - too thick
	01/16/01	14.60	Can't determine	-	To oil - very thick
	02/15/01	14.34	14.36	0.02	Oil present
	03/16/01	14.75	14.78	0.03	Oil present
	04/18/01	14.80	Can't determine	-	Couldn't clean probe
EW-3	05/15/01	11.53	11.54	0.01	Oil present - thin layer
	06/20/01	14.10	Can't determine	-	To oil
	07/24/01	14.95	15.00	0.05	To oil
	08/21/01	15.34	15.38	0.04	Oil present
	09/28/01	15.62	15.67	0.05	To oil
	10/03/01	14.62	14.65	-	To oil
	11/08/00	16.42	16.50	0.08	Oil present
	12/04/00	14.42	Can't determine	-	Can't determine oil depth - too thick
	01/16/01	14.80	Can't determine	-	Oil present - can't get thickness
	02/15/01	14.50	Can't determine	-	Oil present
EW-3	03/16/01	14.77	14.80	0.03	Oil present
	04/18/01	14.60	Can't determine	-	Couldn't clean probe
	05/15/01	11.38	11.42	0.04	Oil present
	06/20/01	14.13	14.17	0.04	Oil present
	07/24/01	15.05	15.11	0.06	Oil present
	08/21/01	15.52	15.58	0.06	Oil present

Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
EW-3 (Continued)	09/28/01	15.81	15.89	0.08	To oil
	10/03/01	14.60	14.64	0.04	To oil
EW-4	11/08/00	13.75	13.77	0.02	Oil present
	12/04/00	12.64	12.65	0.01	Oil present
	01/16/01	12.74	Can't determine	-	Thick oil present
	02/15/01	12.25	Can't determine	-	To oil
	03/16/01	12.42	Can't determine	-	To oil - very thick
	04/18/01	11.35	Can't determine	-	Couldn't clean probe
	05/15/01	9.01	9.02	0.01	To oil - thin layer
	06/20/01	11.58	11.59	0.005	Oil present
	07/24/01	12.90	12.93	0.03	Oil present
	08/21/01	13.62	13.64	0.02	Oil present
	09/28/01	14.00	14.02	0.02	To oil
	10/03/01	12.55	12.57	0.02	To oil (very thick)
HC-1	11/08/00	-	-	-	Could not find
	12/04/00	-	-	-	Could not find
	01/16/01	-	-	-	Could not find
	02/15/01	-	-	-	Could not find
	03/16/01	-	12.70	-	To water - no oil
	04/18/01	-	12.50	-	To water - clean
	05/15/01	-	9.72	-	To water - some red rust
	06/20/01	-	12.10	-	Water - light red rust
	07/24/01	-	12.91	-	To water - clean
	08/21/01	-	13.27	-	To water - clean
	09/28/01	-	13.45	-	To water - light red rust present
	10/03/01	-	12.63	-	Red rust present (17.85 to bottom)
HC-4	11/08/00	13.68	14.46	0.78	Oil present
	12/04/00	12.97	Can't determine	-	Can't determine oil depth - too thick
	01/16/01	12.81	Can't determine	-	Oil present
	02/15/01	12.51	Can't determine	-	Oil present
	03/16/01	11.91	Can't determine	-	To oil
	04/18/01	12.20	Can't determine	-	Couldn't find probe
	05/15/01	10.48	Can't determine	-	Oil present
	06/20/01	12.15	12.34	0.19	Oil present
	07/24/01	13.07	13.38	0.31	Oil present
	08/21/01	13.55	14.12	0.57	Oil present
	09/28/01	13.80	14.61	0.81	Oil present
	10/03/01	12.65	13.45	0.80	Oil present (18.13 to bottom)
HC-5	11/08/00	-	18.40	-	To water - no oil
	12/04/00	-	17.63	-	To water - no measurable oil - sheen
	01/16/01	-	17.55	-	To water - no oil
	02/15/01	-	17.28	-	To water - no oil
	03/16/01	-	17.24	-	To water
	04/18/01	-	16.98	-	To water - clean
	05/15/01	-	14.25	-	To water - clean
	06/20/01	-	16.80	-	To water - clean
	07/24/01	-	17.88	-	To water - clean
	08/21/01	-	18.40	-	To water - clean
	09/28/01	-	18.72	-	To water - clean
	10/03/01	-	17.46	-	To water (23.05 to bottom)
MW-5	11/08/00	-	10.80	-	To water - no oil
	12/04/00	-	9.93	-	To water - no oil

Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
MW-5 (Continued)	01/16/01	-	9.70	-	To water - no oil
	02/15/01	-	9.35	-	To water - no oil
	03/16/01	-	10.04	-	To water
	04/18/01	-	9.28	-	Clean
	05/15/01	-	6.51	-	Clean
	06/20/01	-	9.20	-	Clean
	07/24/01	-	10.40	-	Clean
	08/21/01	-	10.97	-	Clean water
	09/28/01	-	11.28	-	Clean water
	10/03/01	-	9.92	-	To water (12.83 to bottom)
MW-11	11/08/00	-	-	-	Not tested
	12/04/00	18.40	-	-	Oil to thick - do not test
	01/16/01	17.90	-	-	To oil (thick) - not measurable
	02/15/01	-	-	-	Can't find - deep snow
	03/16/01	-	-	-	
	04/18/01	15.75	-	-	Couldn't clean probe
	05/15/01	-	-	-	
	06/20/01	-	-	-	Not tested
	07/24/01	-	-	-	Not tested
	08/21/01	-	-	-	Not tested
	09/28/01	-	-	-	Not tested
	10/03/01	-	-	-	Not tested
TP-1, 2"	11/08/00	-	20.02	-	To water - no oil
	12/04/00	-	19.10	-	To water - sheen
	01/16/01	-	19.16	-	To water - no oil
	02/15/01	-	18.88	-	To water - no oil
	03/16/01	-	19.08	-	To water - light sheen
	04/18/01	-	18.85	Trace	To water - light sheen
	05/15/01	15.785	15.79	0.005	To thin layer of oil
	06/20/01	-	18.53	-	To water - light sheen
	07/24/01	-	19.46	-	To water - light sheen
	08/21/01	-	19.95	-	To water - light sheen
	09/28/01	-	20.22	-	To water - sheen present
	10/03/01	-	19.08	-	Trace of oil (22.41 to bottom)
TP-1, 4"	11/08/00	-	19.75	-	To water - sheen
	12/04/00	18.83	18.84	0.01	Thin layer of oil
	01/16/01	-	18.92	-	To water - no oil
	02/15/01	-	18.63	-	To water - light sheen
	03/16/01	-	18.82	-	To water - heavy sheen
	04/18/01	-	18.60	Skim	To water - heavy sheen
	05/15/01	-	15.63	-	Heavy sheen
	06/20/01	-	18.28	-	To water - light sheen
	07/24/01	-	19.20	-	To water - heavy sheen
	08/21/01	-	19.69	-	To water - heavy sheen
	09/28/01	-	19.96	-	To water - heavy sheen
	10/03/01	-	18.85	-	Trace of oil - micro worms (19.98 to bottom)
TP-2	11/08/00	-	14.95	-	To water - no oil
	12/04/00	-	15.37	-	To bottom - no oil - dry well
	01/16/01	-	15.45	-	Dry well
	02/15/01	-	15.35	-	Dry well
	03/16/01	-	14.61	-	to water
	04/18/01	15.21	Can't determine	-	Couldn't clean probe
	05/15/01	-	12.19	-	To water

Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
TP-2 (Continued)	06/20/01	14.85	14.86	0.01	Oil present
	07/24/01	-	15.40	-	Well bottom - sludge no oil
	08/21/01	-	15.40	-	Well bottom - dry trace of oil
	09/28/01	-	15.90	-	well bottom - dry light trace of oil
	10/03/01	-	14.50	-	To water (16.40 to bottom)
TP-3	11/08/00	-	16.45	-	Dry well
	12/04/00	-	16.05	-	Dry well - bottom
	01/16/01	-	16.10	-	Dry well
	02/15/01	-	16.12	-	Dry well
	03/16/01	-	15.01	-	To water - light sheen
	04/18/01	-	15.80	-	To water - light sheen
	05/15/01	-	13.28	-	To water - very light sheen
	06/20/01	-	15.58	-	To water - oil globs on probe
	07/24/01	-	16.10	-	Well bottom - dry well/clean
	08/21/01	-	16.10	-	Well bottom - dry trace of oil
	09/28/01	-	16.10	-	Well bottom - dry trace of oil
	10/03/01	-	15.20	-	Trace of oil - micro worms present (17.10 to bottom)
TP-5	11/08/00	-	17.92	-	To water - no oil
	12/04/00	-	16.27	-	To water - no measurable oil - sheen
	01/16/01	-	16.11	-	To water - light sheen
	02/15/01	-	15.76	-	To water - light sheen
	03/16/01	-	15.12	-	To water
	04/18/01	-	15.55	-	Clean
	05/15/01	-	12.73	-	Clean
	06/20/01	-	15.21	-	Clean
	07/24/01	-	16.35	-	Clean
	08/21/01	-	16.86	-	To water - micro worms present
	09/28/01	-	16.98	-	To water - trace of oil
	10/03/01	-	15.63	-	To water (18.10 to bottom)
TP-6	11/08/00	-	15.00	-	Dry well
	12/04/00	-	14.76	-	To water - no oil
	01/16/01	-	14.62	-	Dry well
	02/15/01	-	14.42	-	To water - no oil
	03/16/01	-	14.13	-	To water
	04/18/01	-	14.14	-	Clean
	05/15/01	-	11.62	-	Clean
	06/20/01	-	13.95	-	Clean
	07/24/01	-	14.79	-	Specks of oil
	08/21/01	-	14.95	-	Well bottom - dry trace of oil
	09/28/01	-	14.98	-	Well bottom - oily mud
	10/03/01	-	14.38	-	To water (15.98 to bottom)
TP-7	11/08/00	-	17.30	-	Dry well
	12/04/00	-	17.05	-	Bottom - dry well
	01/16/01	-	17.00	-	Dry well
	02/15/01	-	17.10	-	Dry well
	03/16/01	-	14.73	-	To water - red rust in water
	04/18/01	-	15.38	None	Clean
	05/15/01	-	14.36	-	To water - red rust color
	06/20/01	-	16.96	-	Dry well - wet red rust
	07/24/01	-	16.98	-	Well bottom - dry
	08/21/01	-	16.98	-	Well bottom - dry
	09/28/01	-	16.98	-	Well bottom - dry
	10/03/01	-	16.81	-	To water - micro worms (17.98 to bottom)

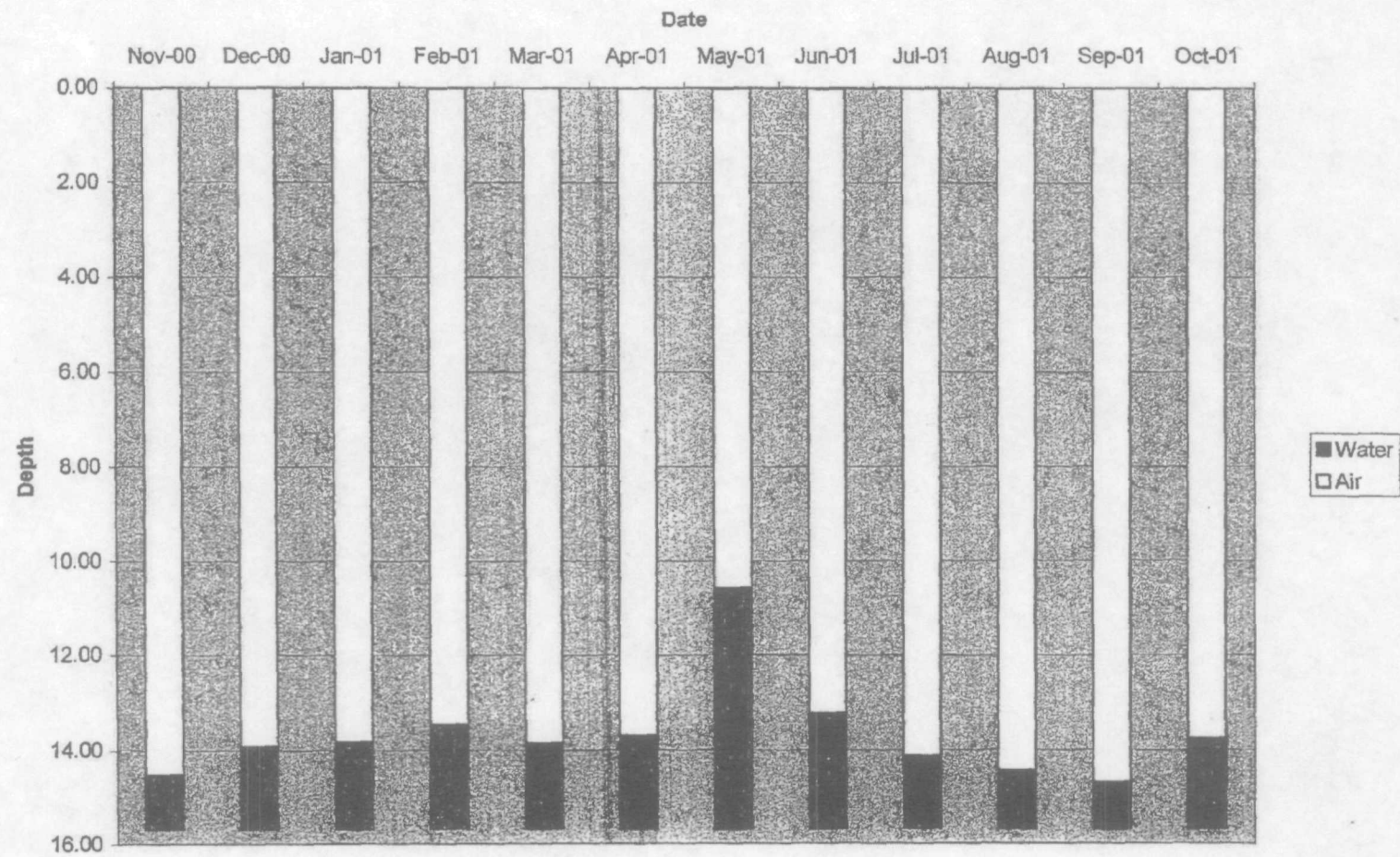
Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
TP-8	11/08/00	-	17.40	-	Dry well
	12/04/00	-	16.76	-	Bottom - dry well
	01/16/01	-	16.81	-	Dry well
	02/15/01	-	16.80	-	Dry well
	03/16/01	-	16.42	-	To water - oil skim present
	04/18/01	-	16.45	-	To water - skim of oil
	05/15/01	-	14.00	-	To water - skim of oil
	06/20/01	-	16.39	-	To water - skim of oil
	07/24/01	-	16.82	-	Well bottom - dry
	08/21/01	-	16.82	-	Well bottom - dry
	09/28/01	-	16.82	-	Well bottom - dry
	10/03/01	-	16.82	-	Dry - clean
TP-9	11/08/00	-	18.41	-	Water - no oil
	12/04/00	-	17.80	-	To water - no oil
	01/16/01	-	17.67	-	To water - no oil
	02/15/01	-	17.38	-	To water - no oil
	03/16/01	17.35	17.42	0.04	Oil present - very thin oil
	04/18/01	-	17.34	-	Oil present - thin oil
	05/15/01	14.58	14.585	0.005	To thin layer of oil - micro worms present
	06/20/01	17.05	17.055	0.005	Thin layer of oil
	07/24/01	17.95	17.98	0.03	Oil present
	08/21/01	18.35	18.39	0.04	Oil present
	09/28/01	18.61	18.64	0.03	Oil present - micro worms present
	10/03/01	17.66	17.67	0.01	Oil present (20.25 to bottom)
TP-10	11/08/00	-	18.00	-	Dry well
	12/04/00	-	17.48	-	To water - dry well - no oil
	01/16/01	-	17.24	-	To water - no oil
	02/15/01	-	16.96	-	To water - no oil
	03/16/01	-	17.03	-	To water
	04/18/01	-	17.10	-	Clean
	05/15/01	-	14.20	-	To water
	06/20/01	-	16.64	-	To water
	07/24/01	-	17.45	-	To water - micro white worms
	08/21/01	-	17.50	-	Well bottom - light sludge - oily
	09/28/01	-	17.50	-	Well bottom - dry
	10/03/01	-	16.84	-	To water - micro worms (18.47 to bottom)
TP-11	11/08/00	-	18.00	-	Dry well
	12/04/00	-	17.46	-	To water - dry well - no oil
	01/16/01	-	17.23	-	To water - no oil
	02/15/01	-	16.97	-	To water - no oil
	03/16/01	-	17.11	-	To water - very light sheen
	04/18/01	-	17.10	-	To water - very light sheen
	05/15/01	-	14.18	-	To water - light sheen
	06/20/01	-	16.70	-	To water
	07/24/01	-	17.43	-	To water - micro white worms present - no oil
	08/21/01	-	17.58	-	To water - micro white worms present
	09/28/01	-	17.80	-	To water - light sheen present
	10/03/01	-	17.70	-	To water - micro worms (18.90 to bottom)
TP-12	11/08/00	-	14.76	-	To water - no oil
	12/04/00	-	15.01	-	To water - no measureable oil - sheen
	01/16/01	-	14.83	-	To water - no oil
	02/15/01	-	14.72	-	To water - no oil

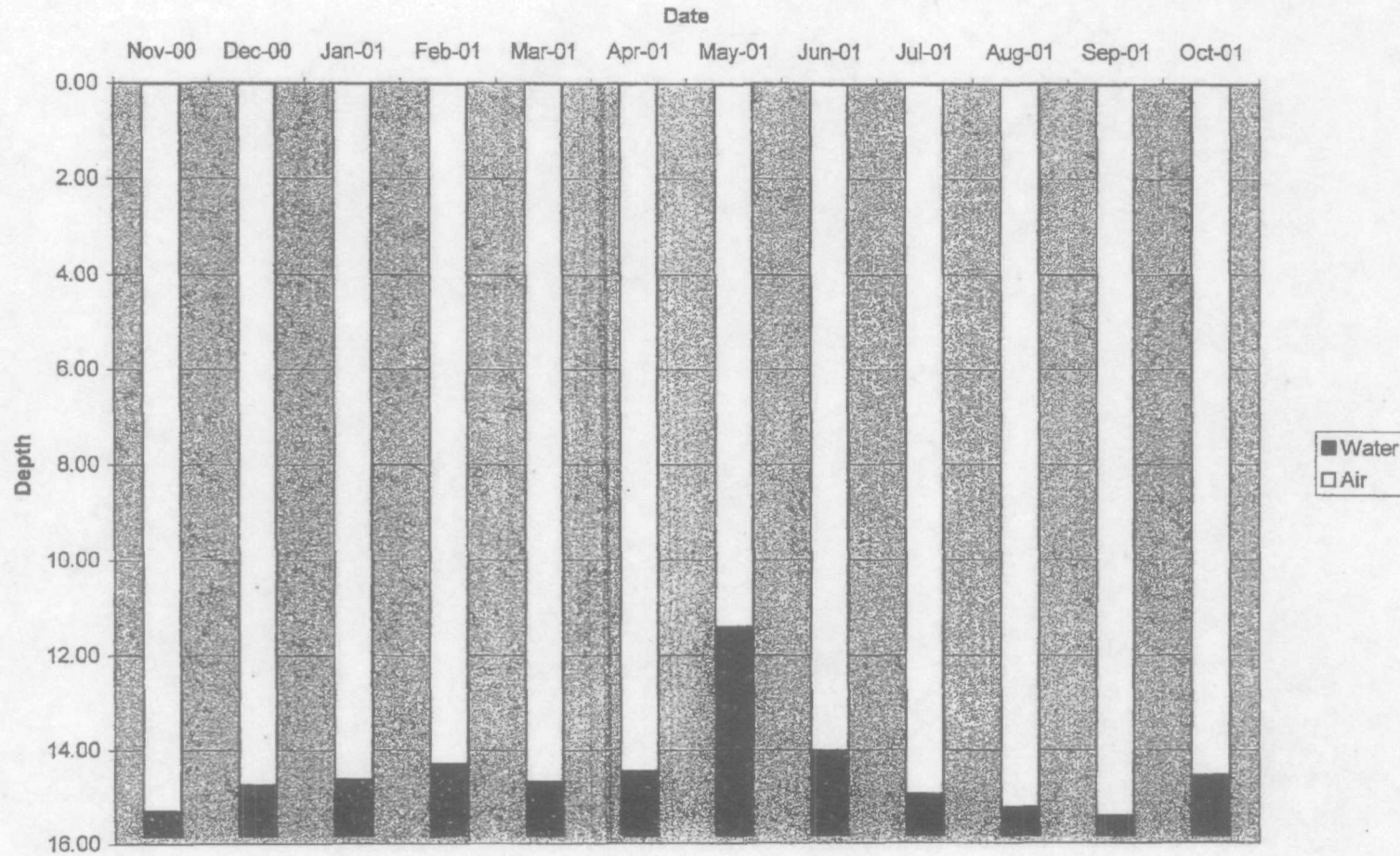
Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
TP-12 (Continued)	03/16/01	-	13.82	-	To water
	04/18/01	-	14.70	-	To water - light sheen
	05/15/01	-	11.60	-	Light sheen
	06/20/01	-	14.26	-	Very light sheen
	07/24/01	-	15.25	-	Well bottom - sandy sludge with oil
	08/21/01	-	15.25	-	Well bottom - sludge with oil
	09/28/01	-	15.28	-	Well bottom - oil sludge
	10/03/01	-	14.53	-	To water - trace of oil (15.50 to bottom)

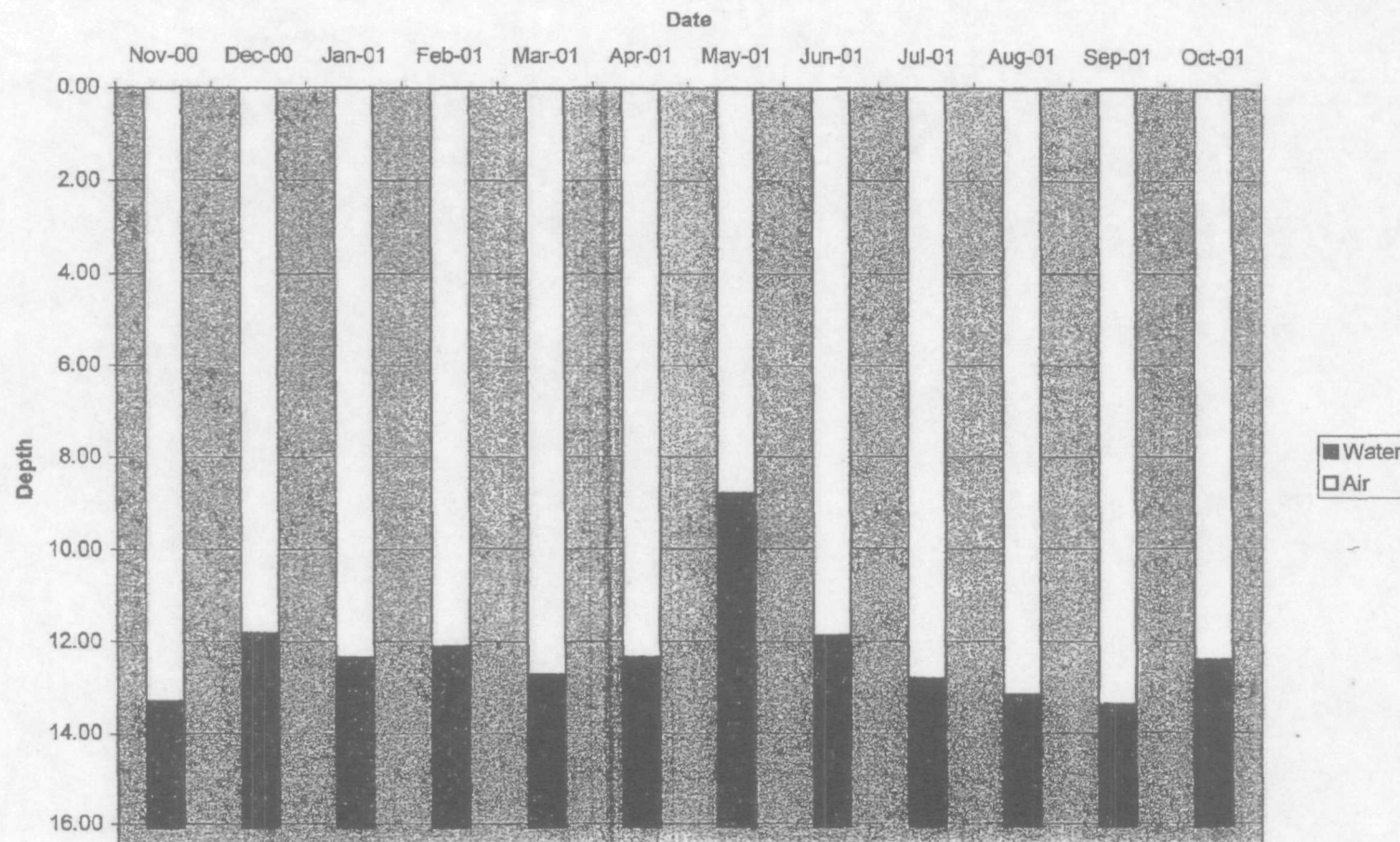
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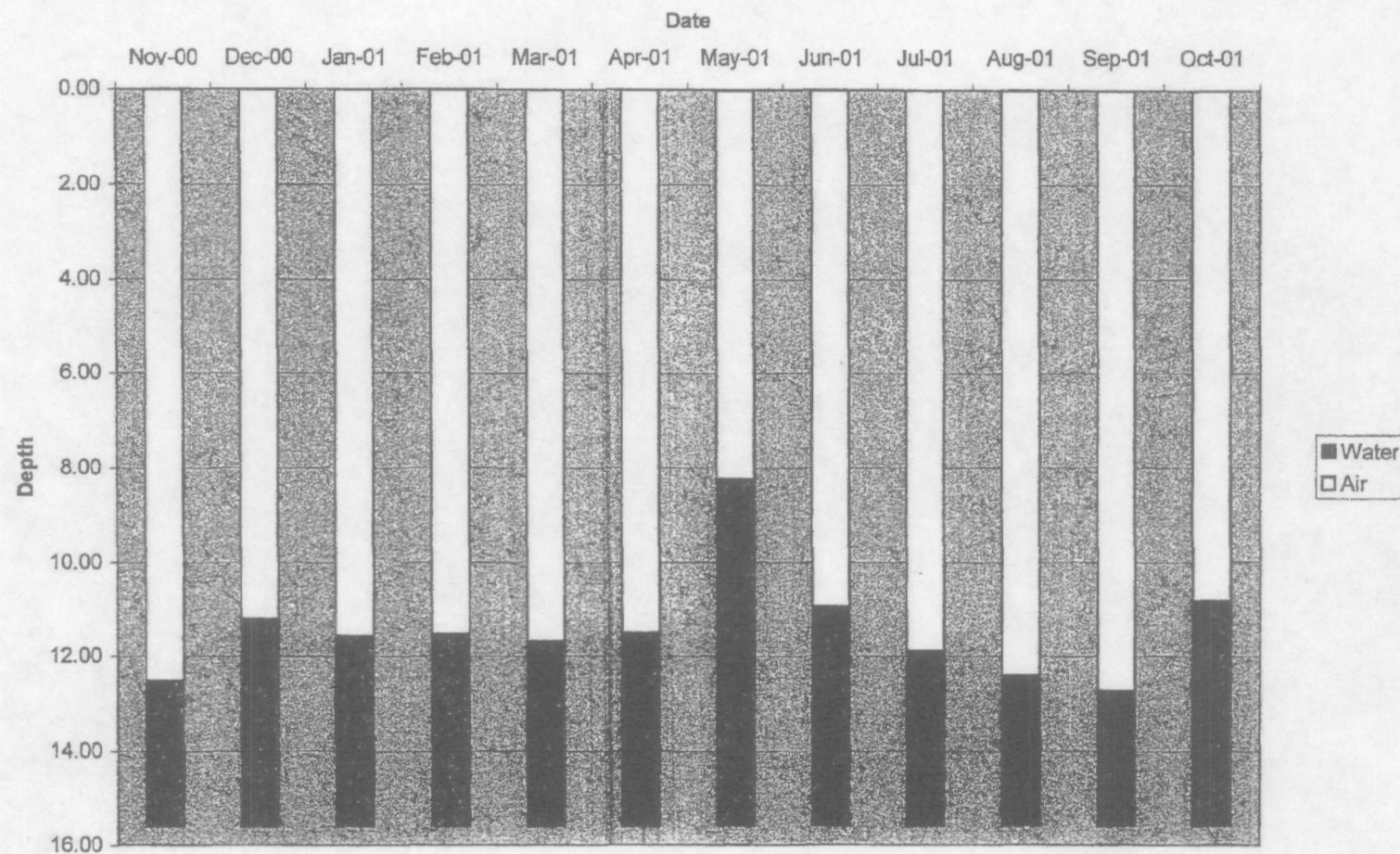
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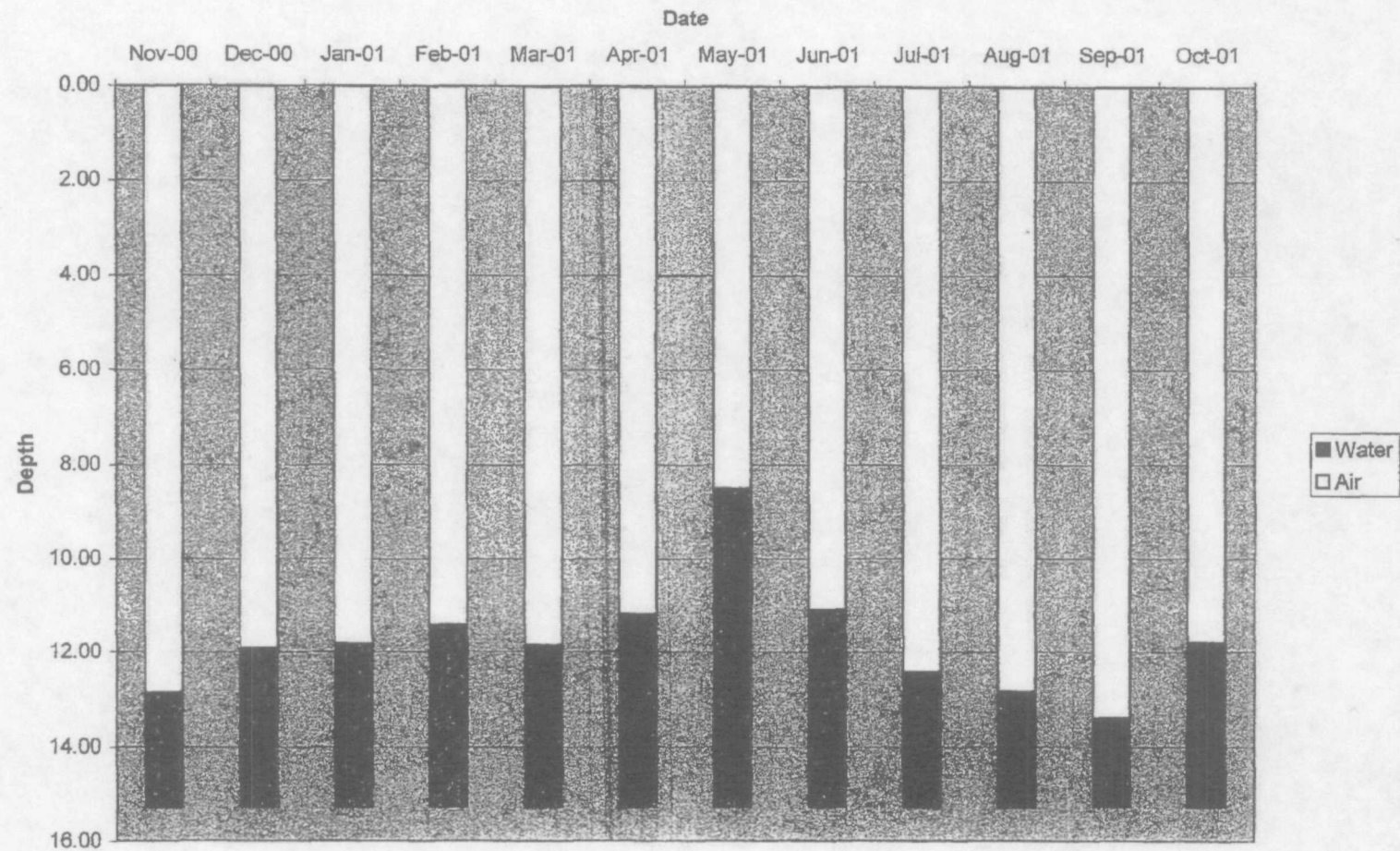
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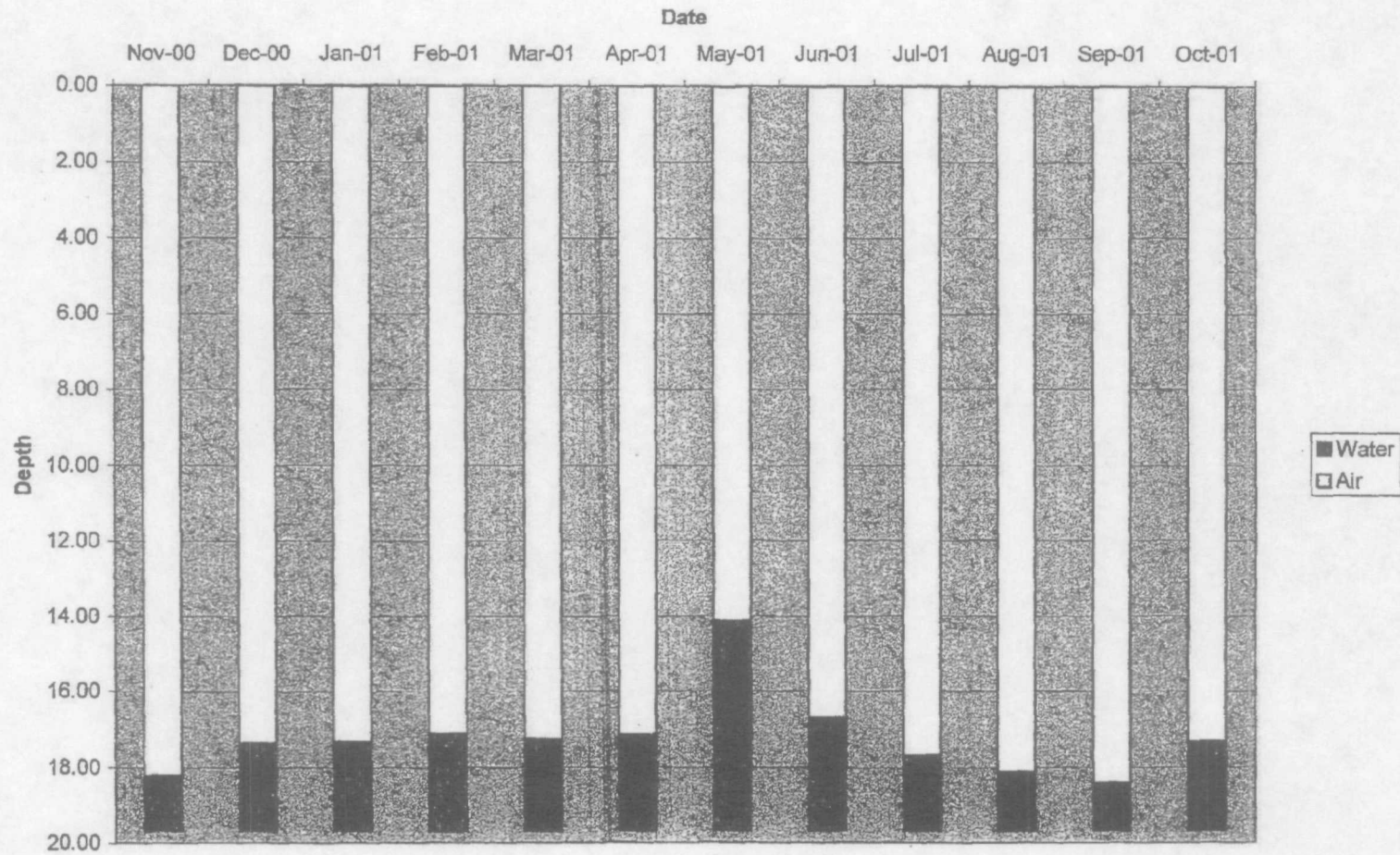
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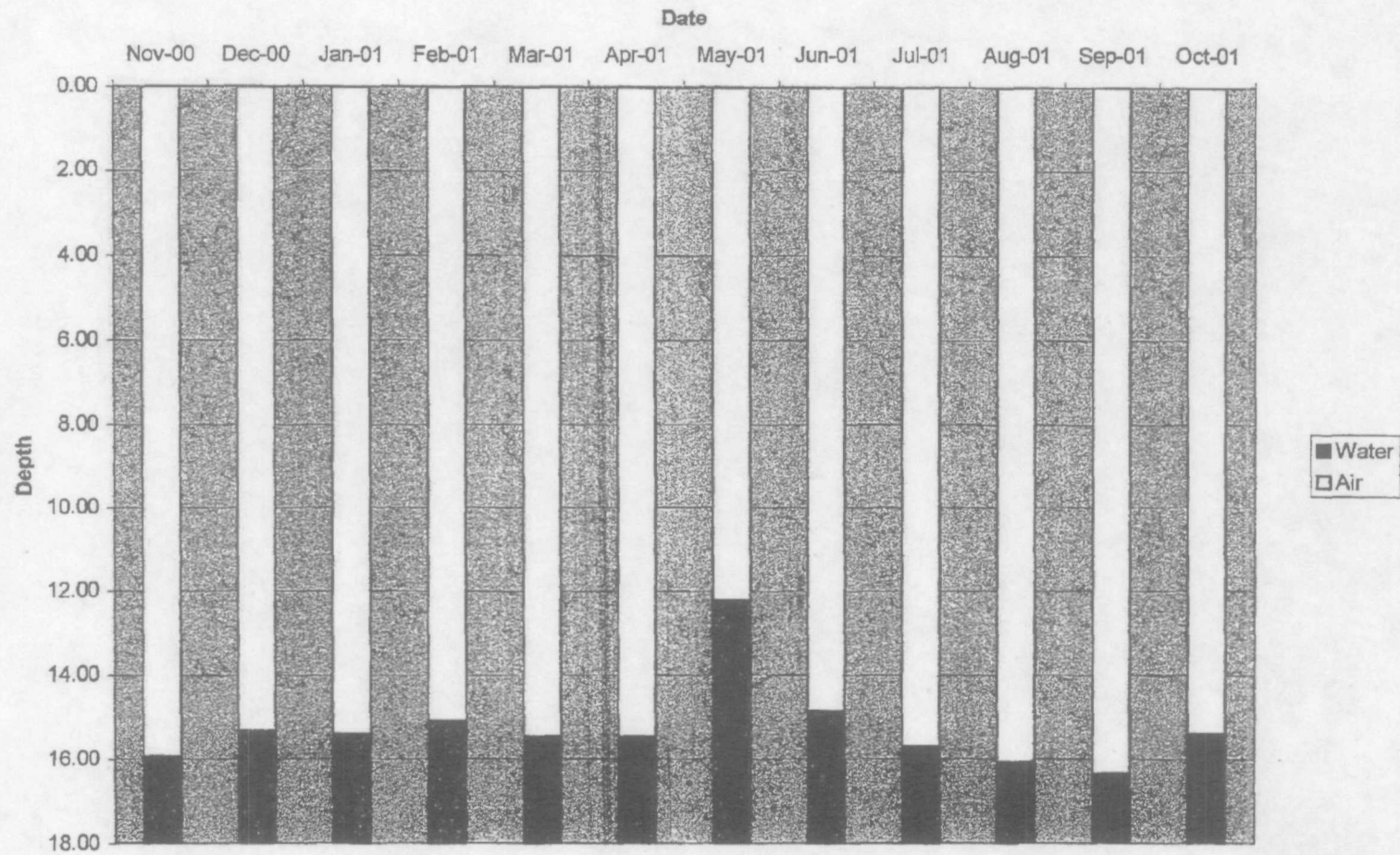
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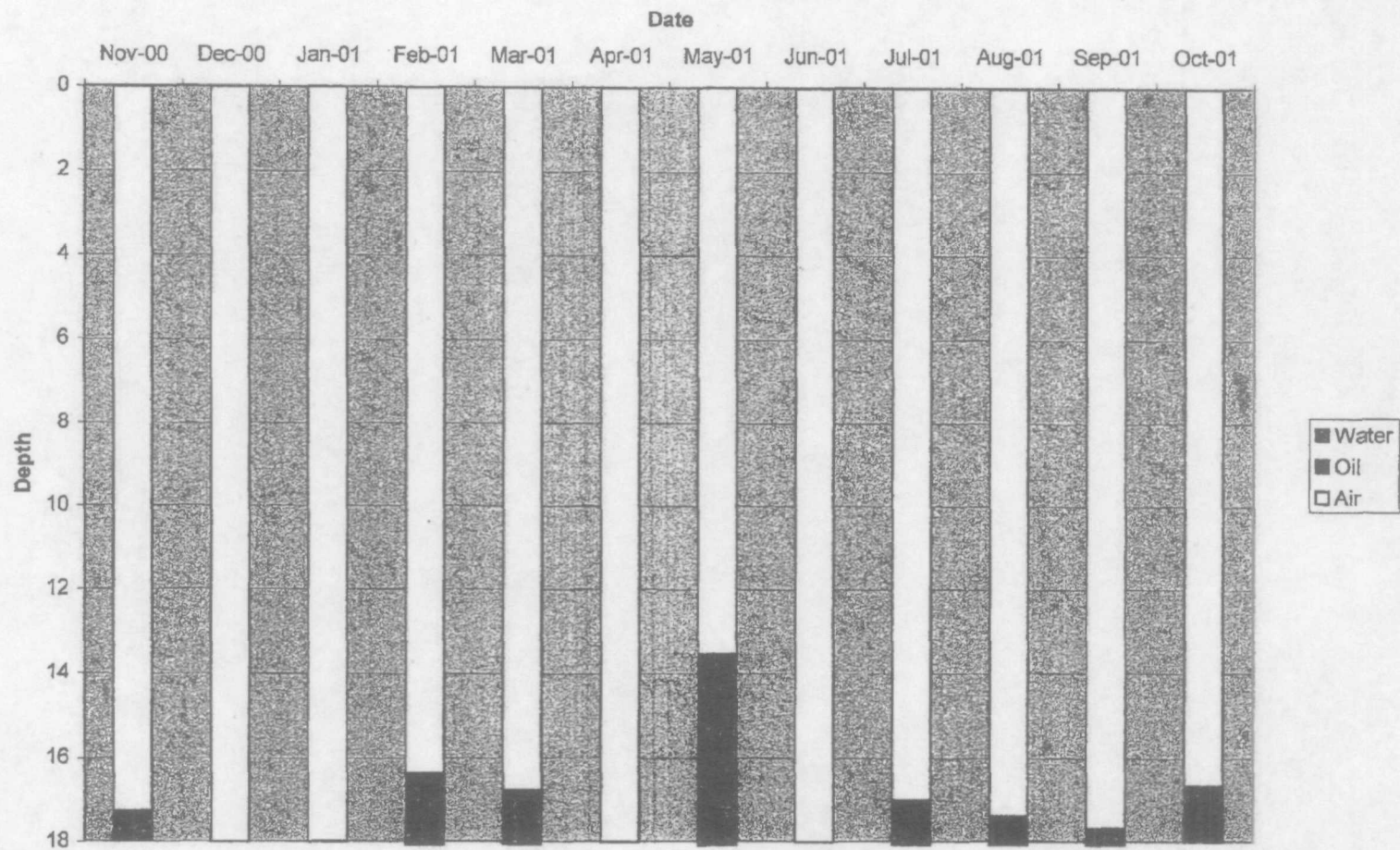
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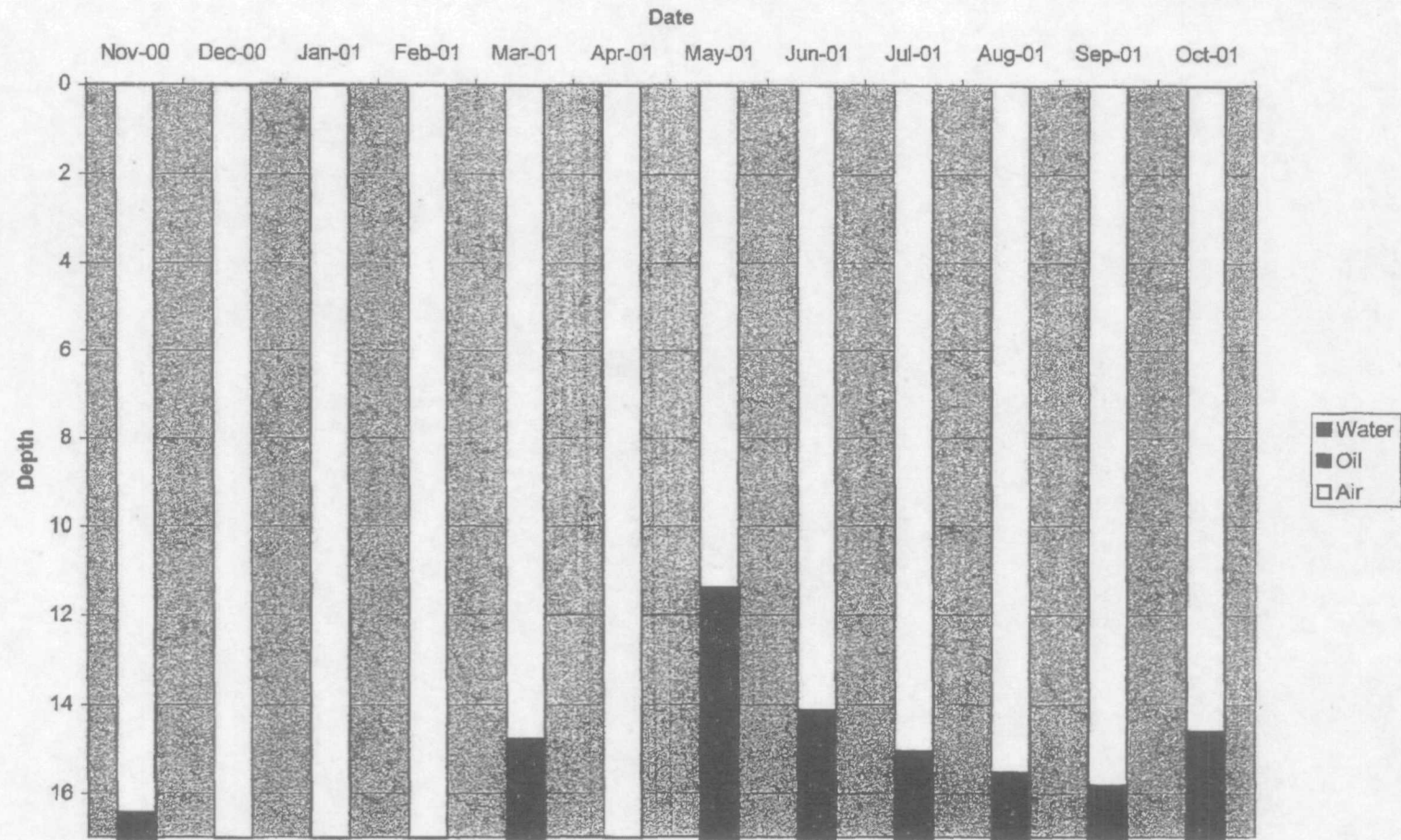
EW-1



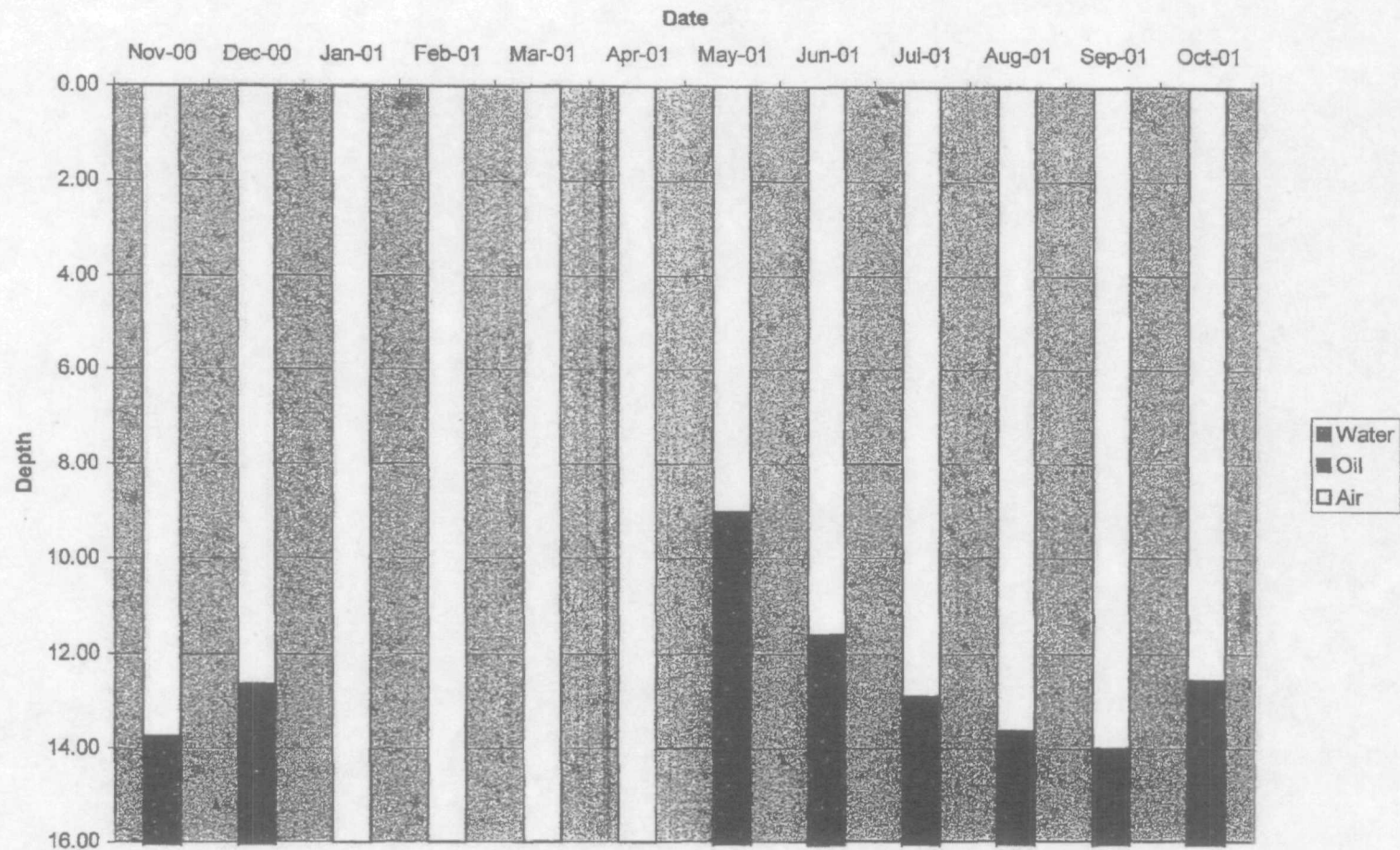
EW-2



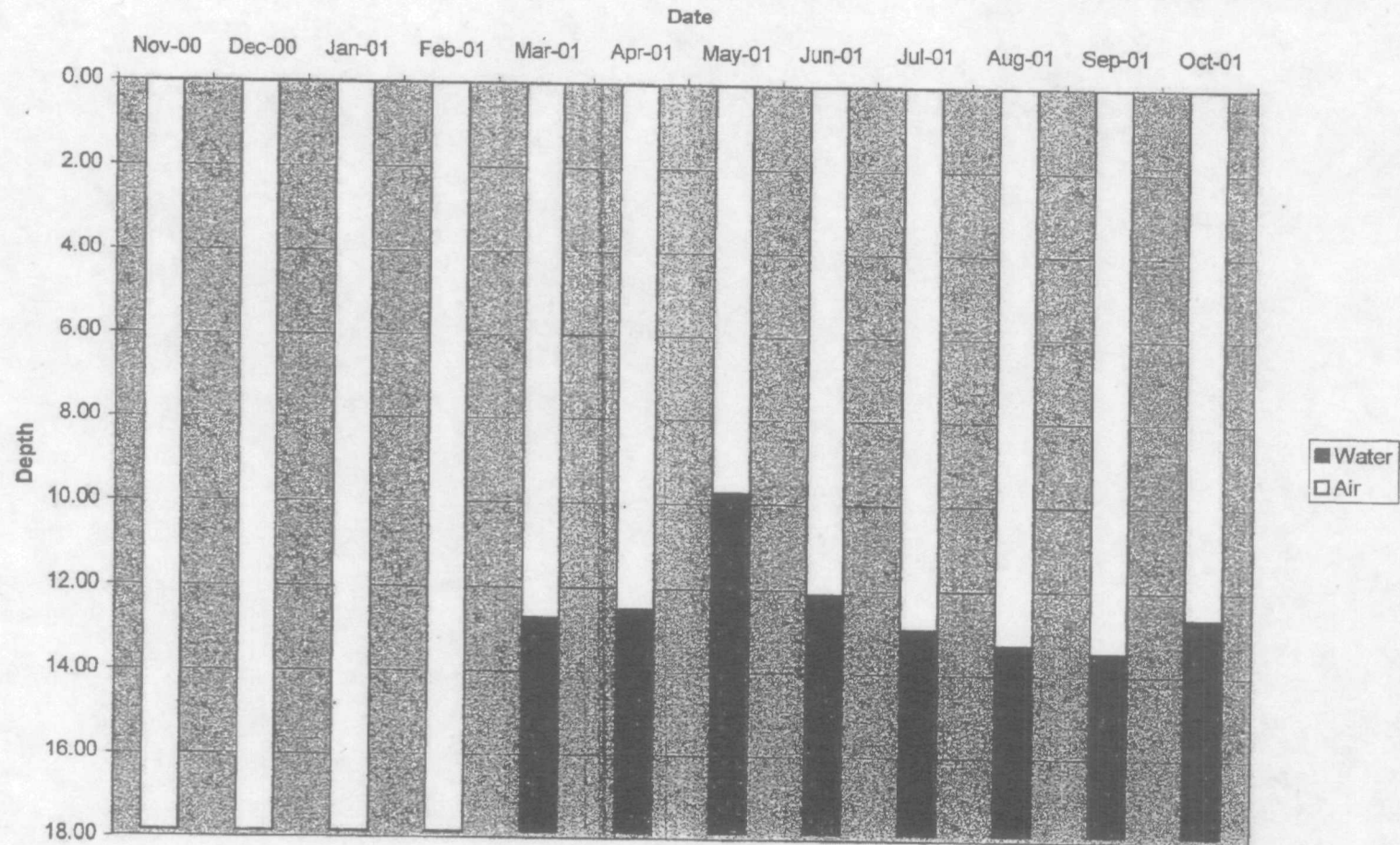
EW-3



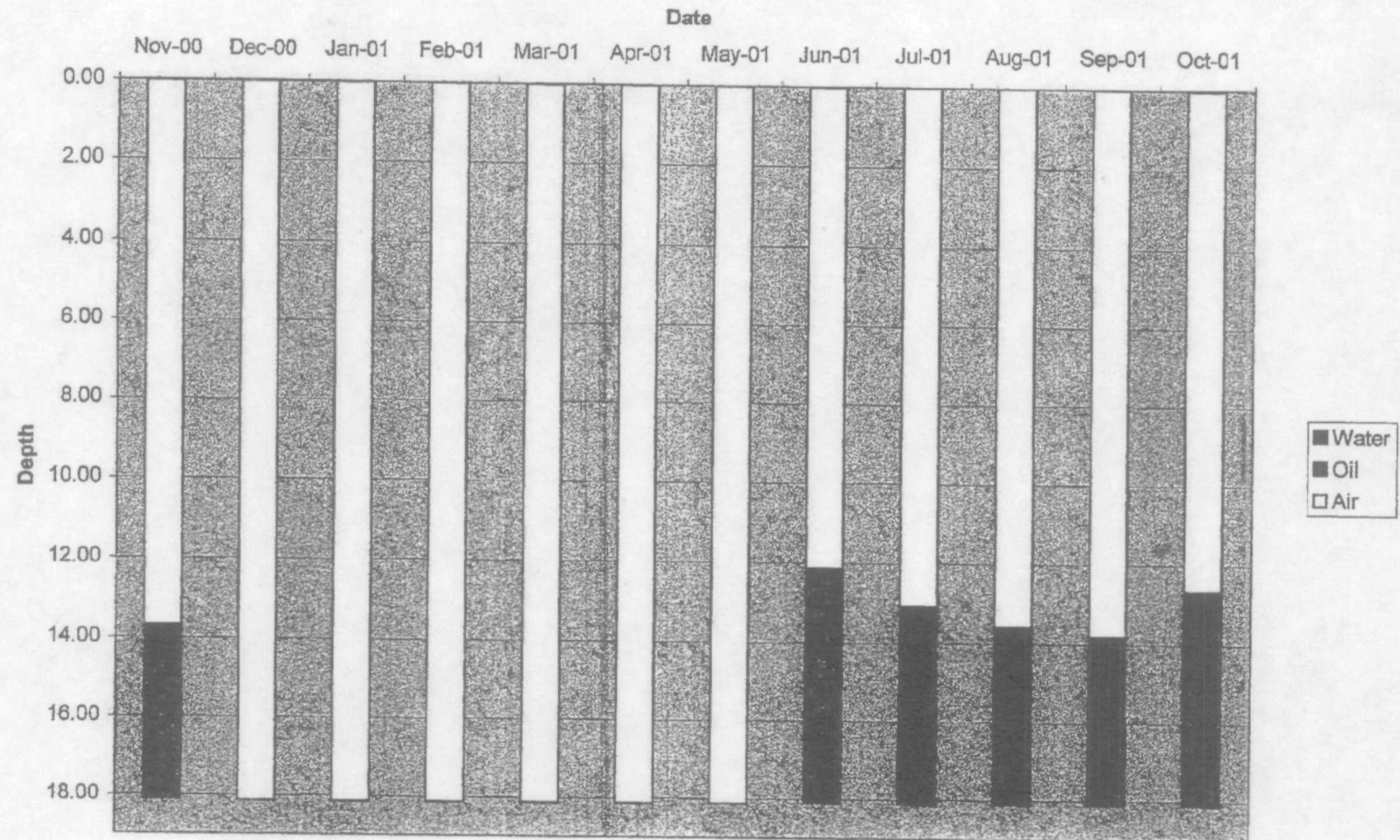
EW-4



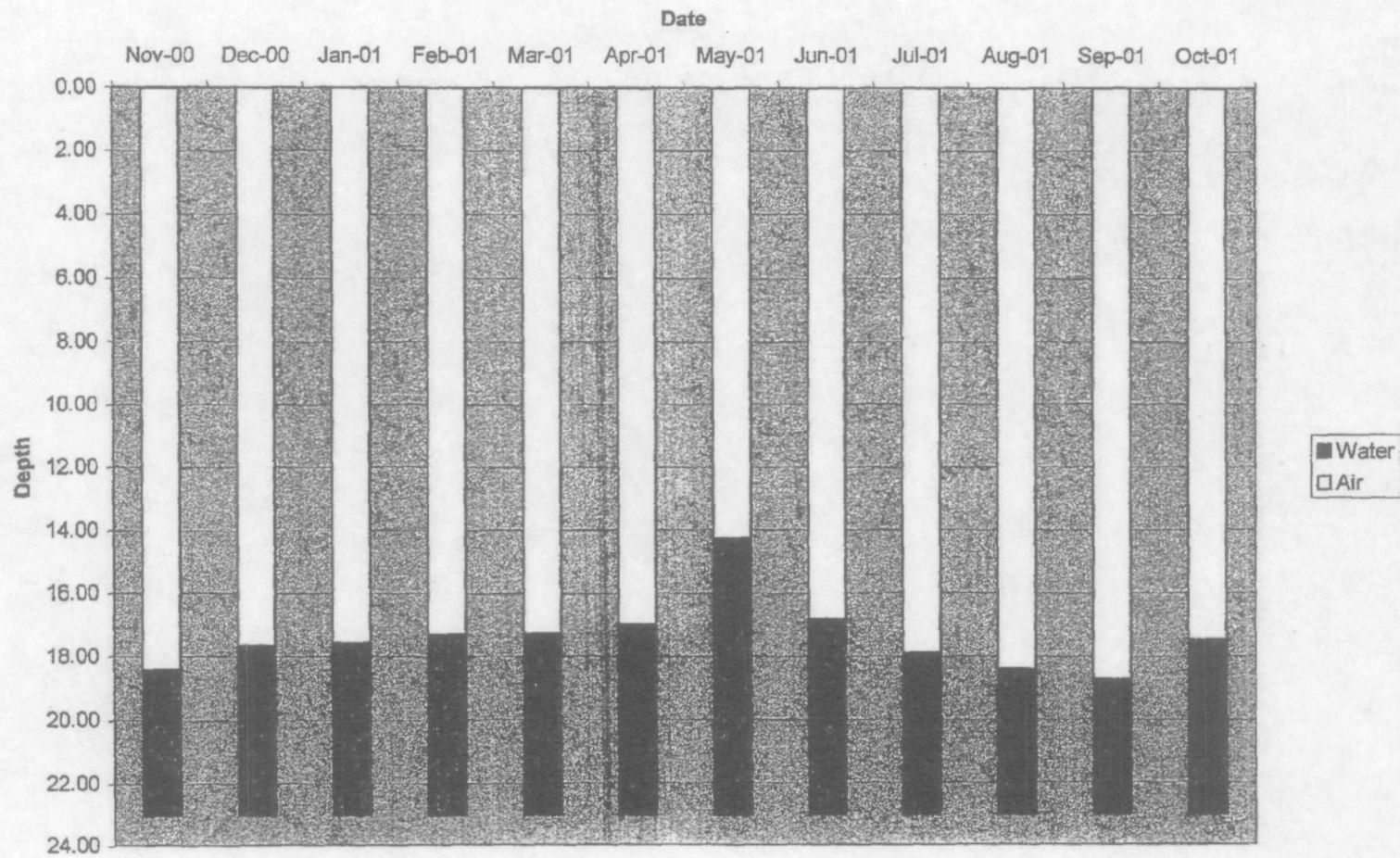
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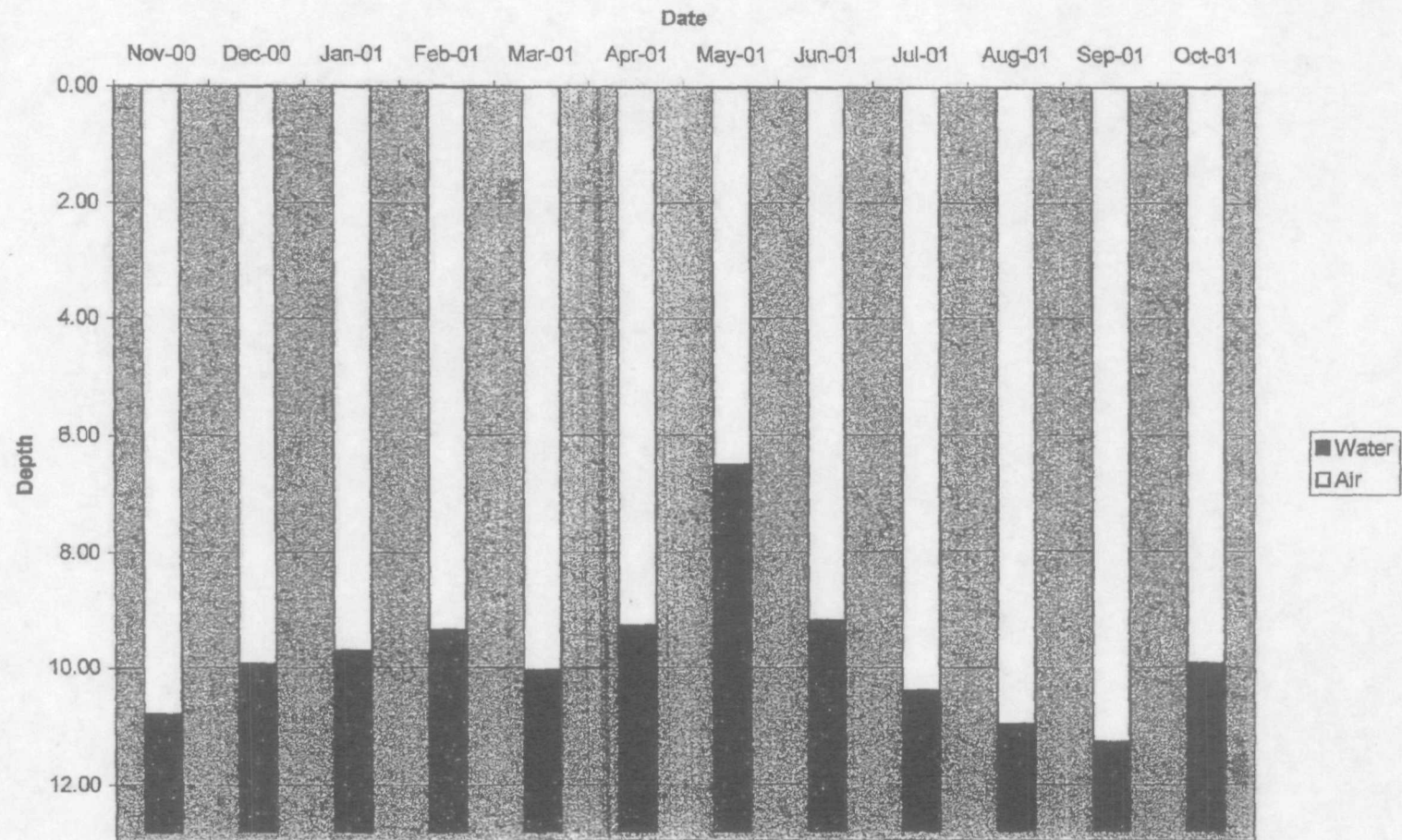
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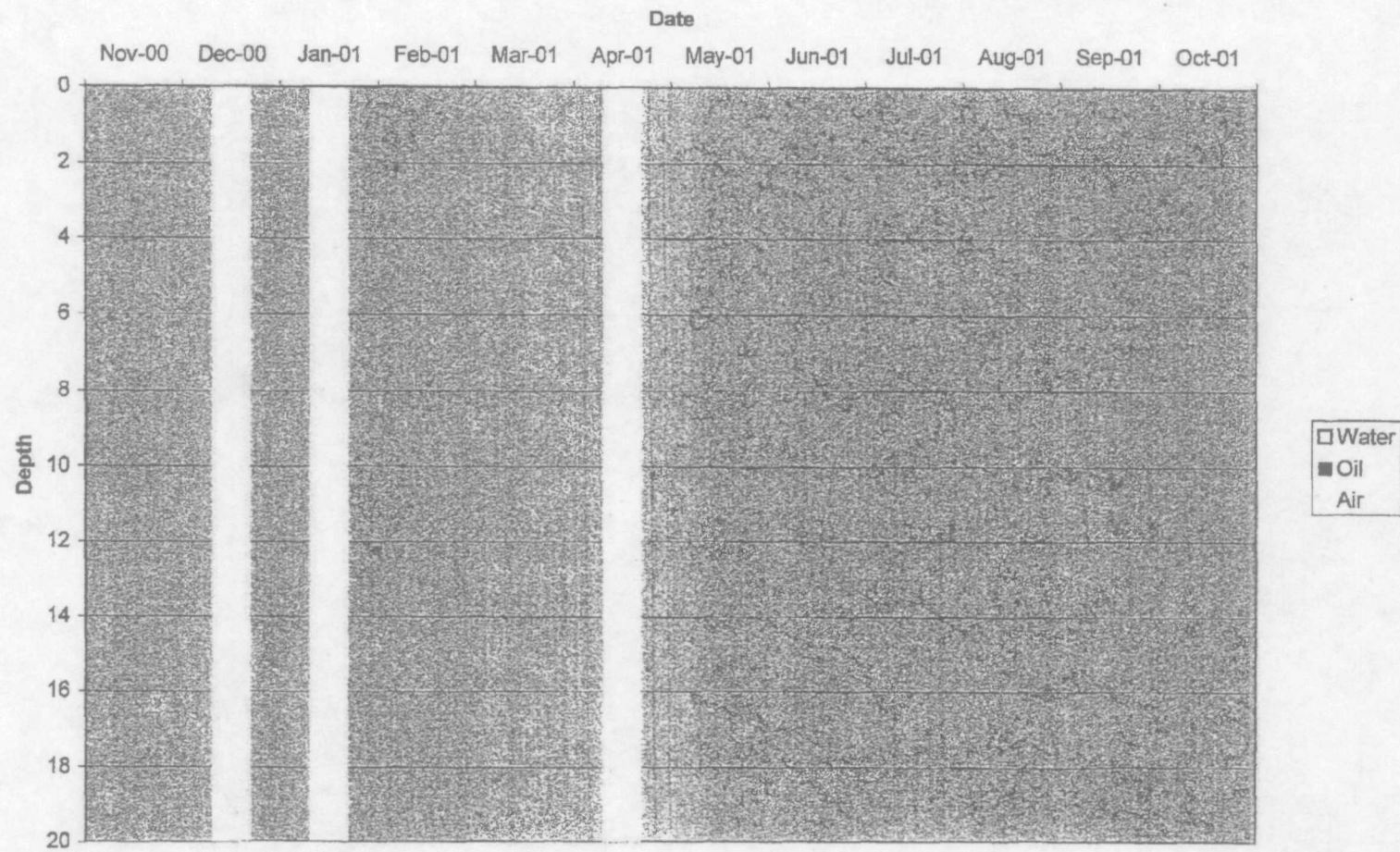
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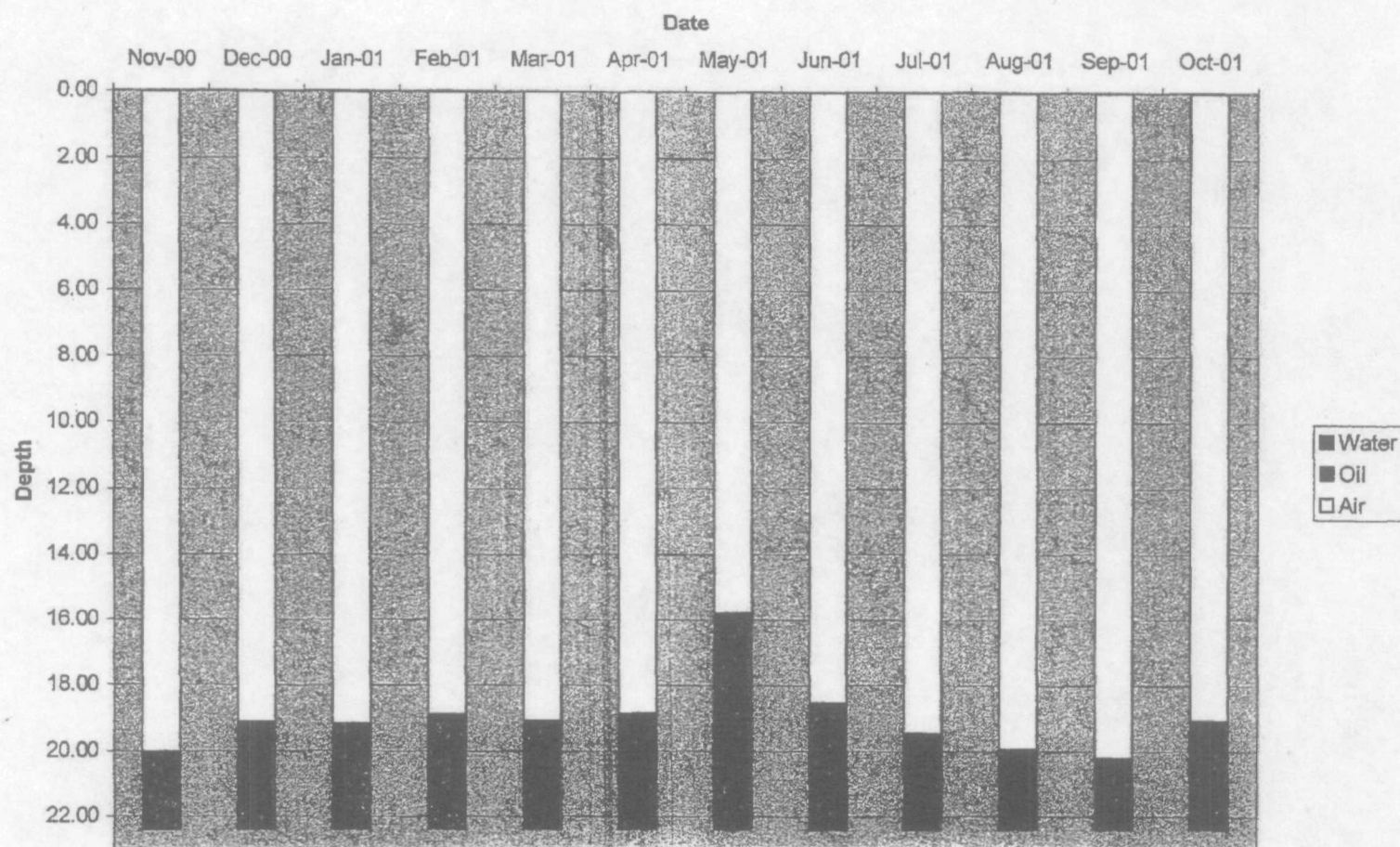
MW-5



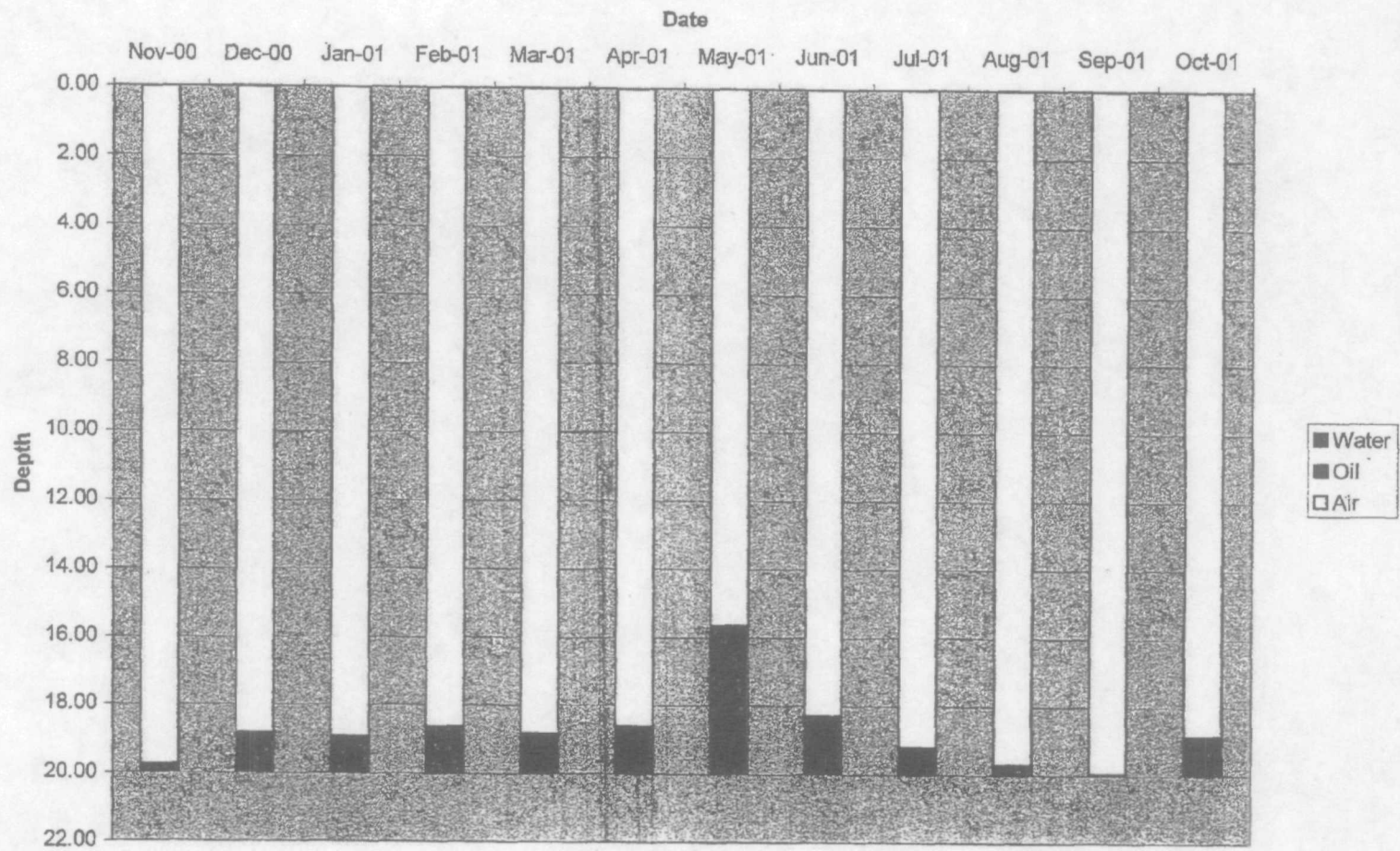
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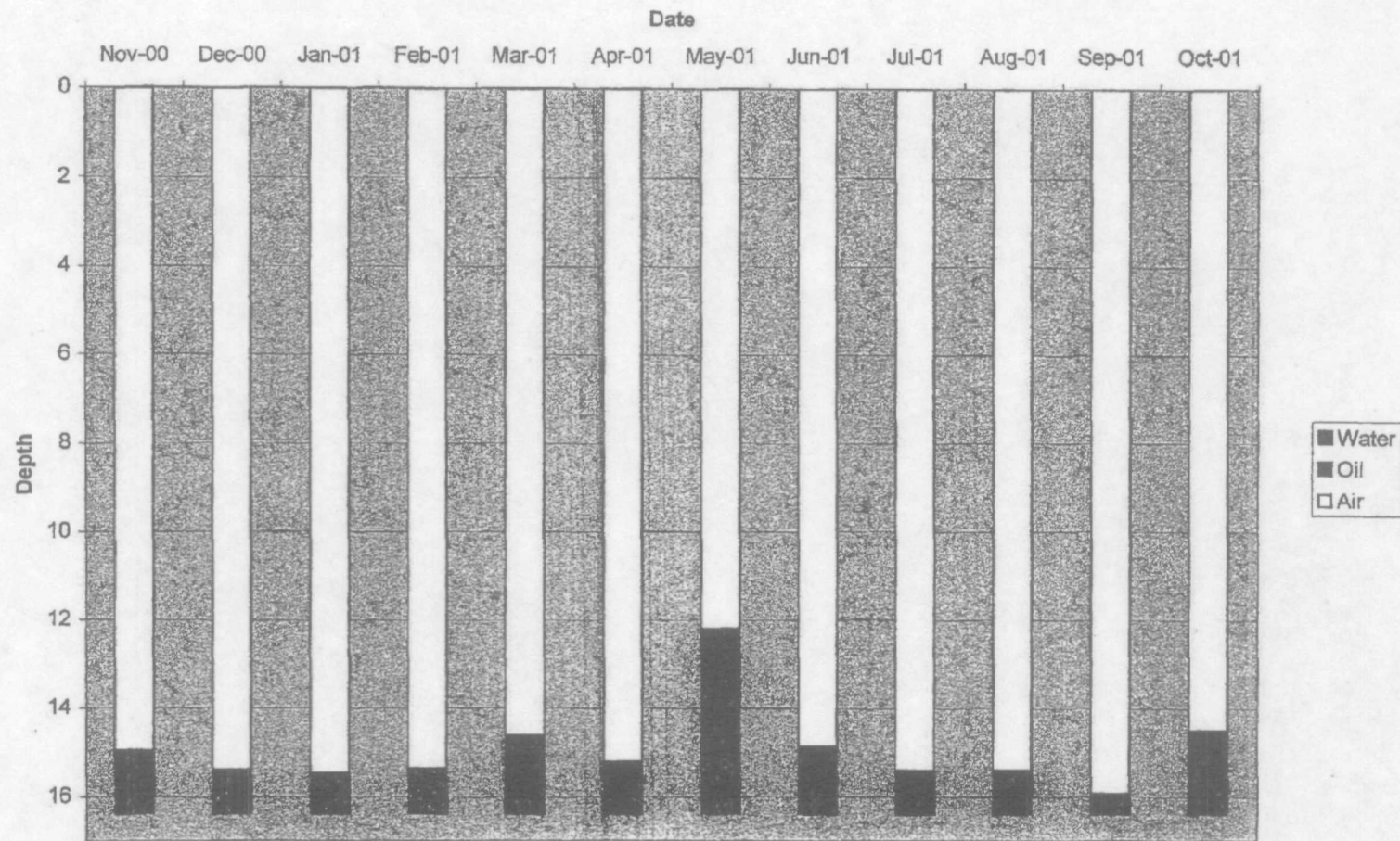
TP-1, 2"



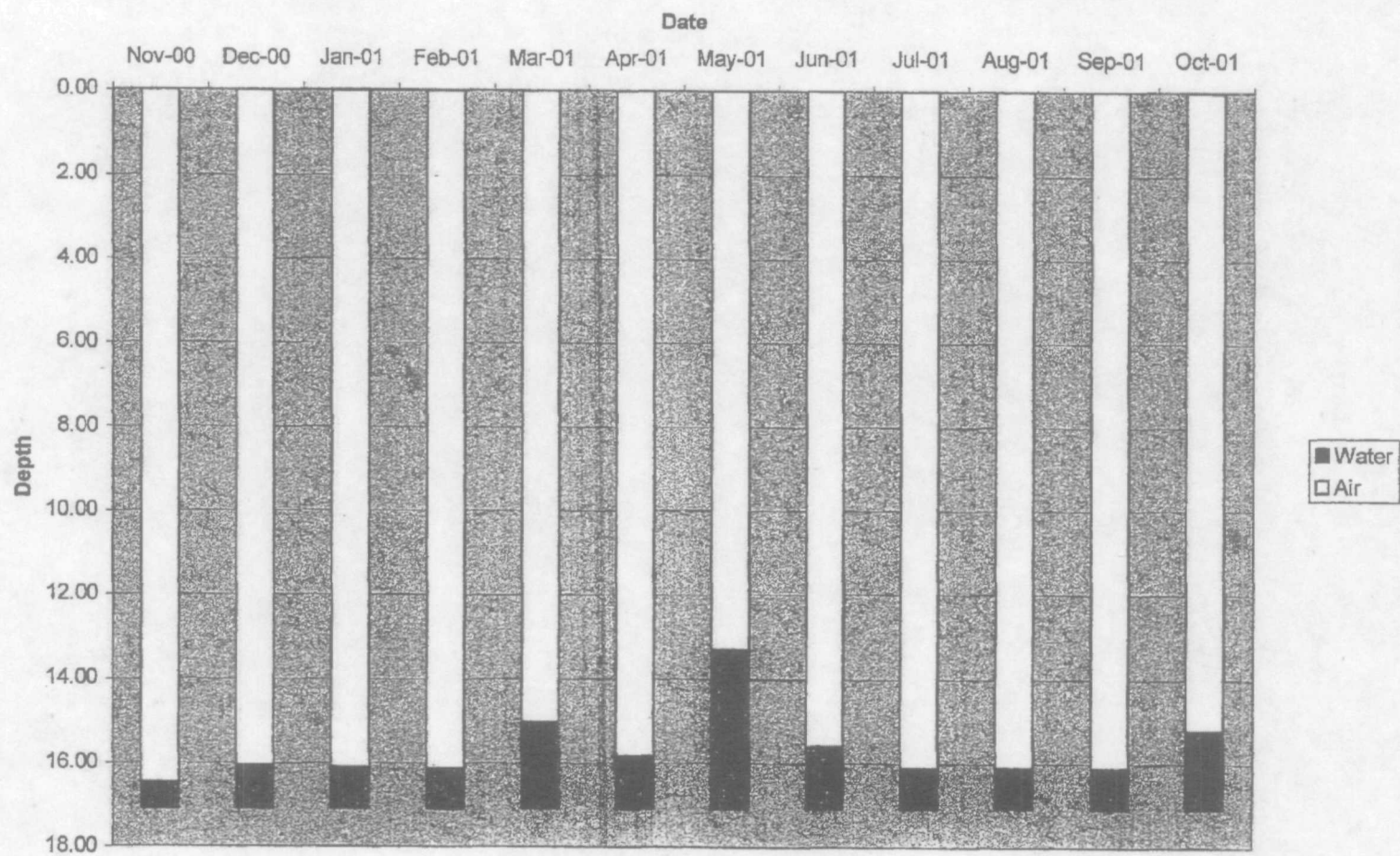
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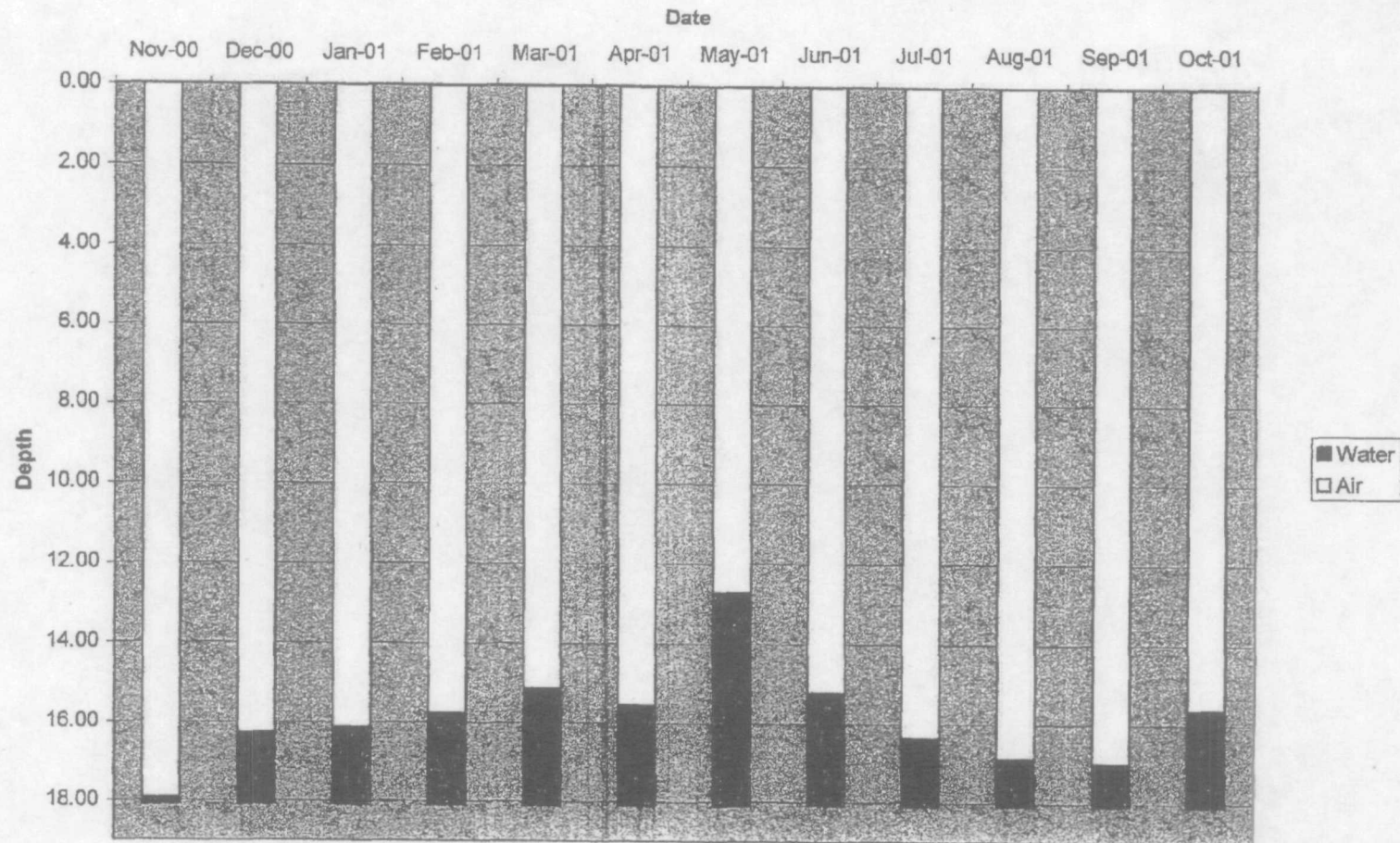
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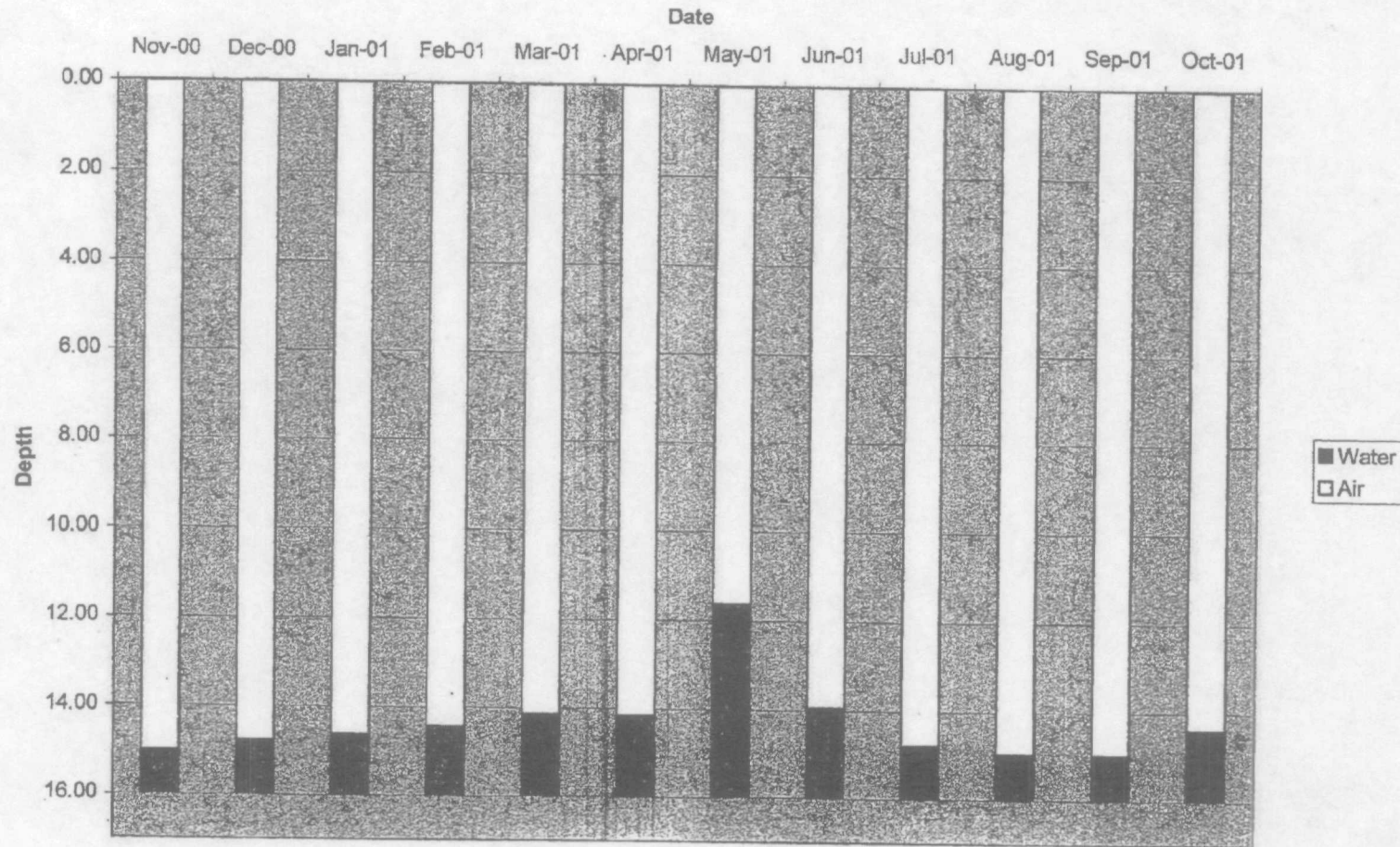
TP-3



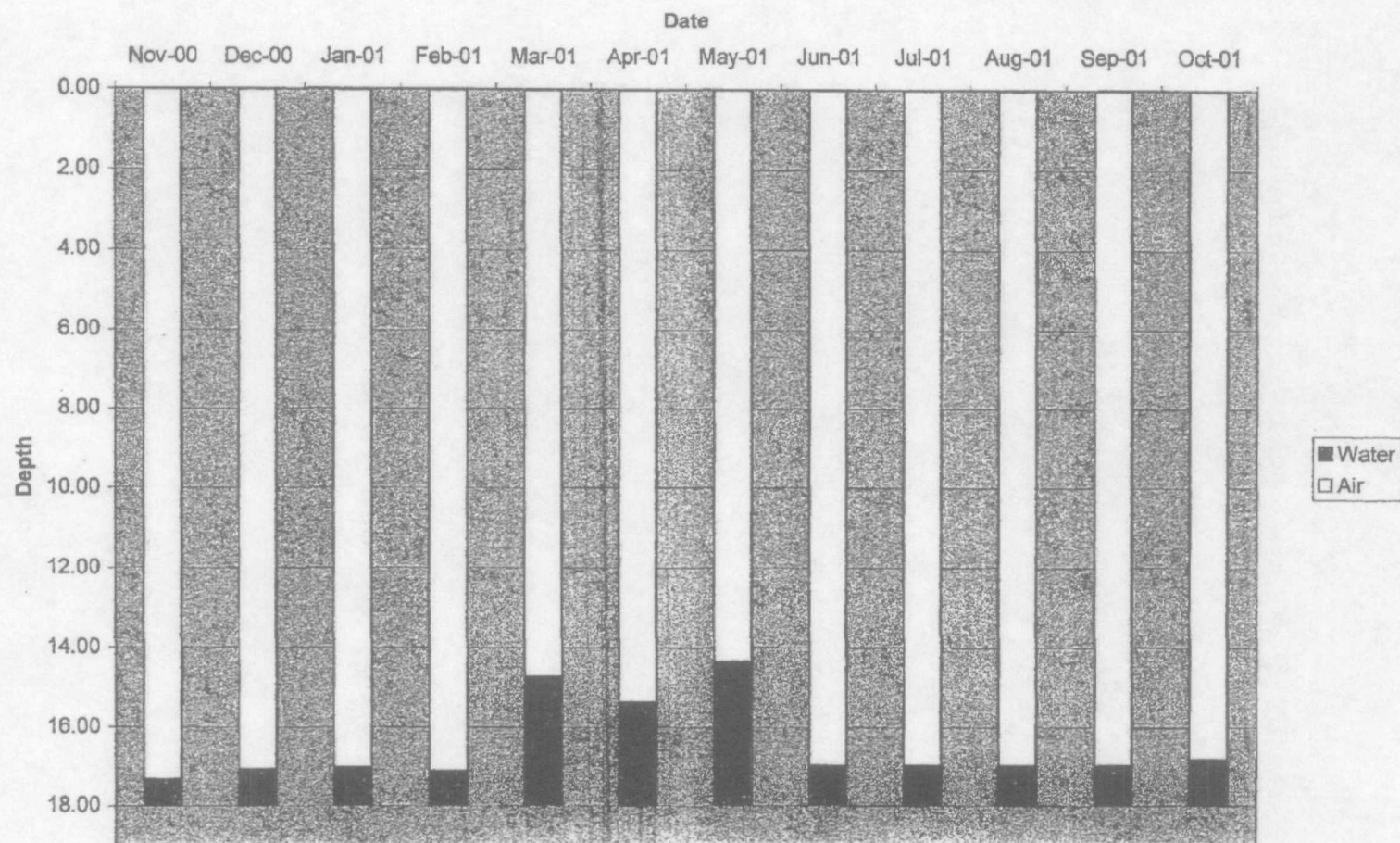
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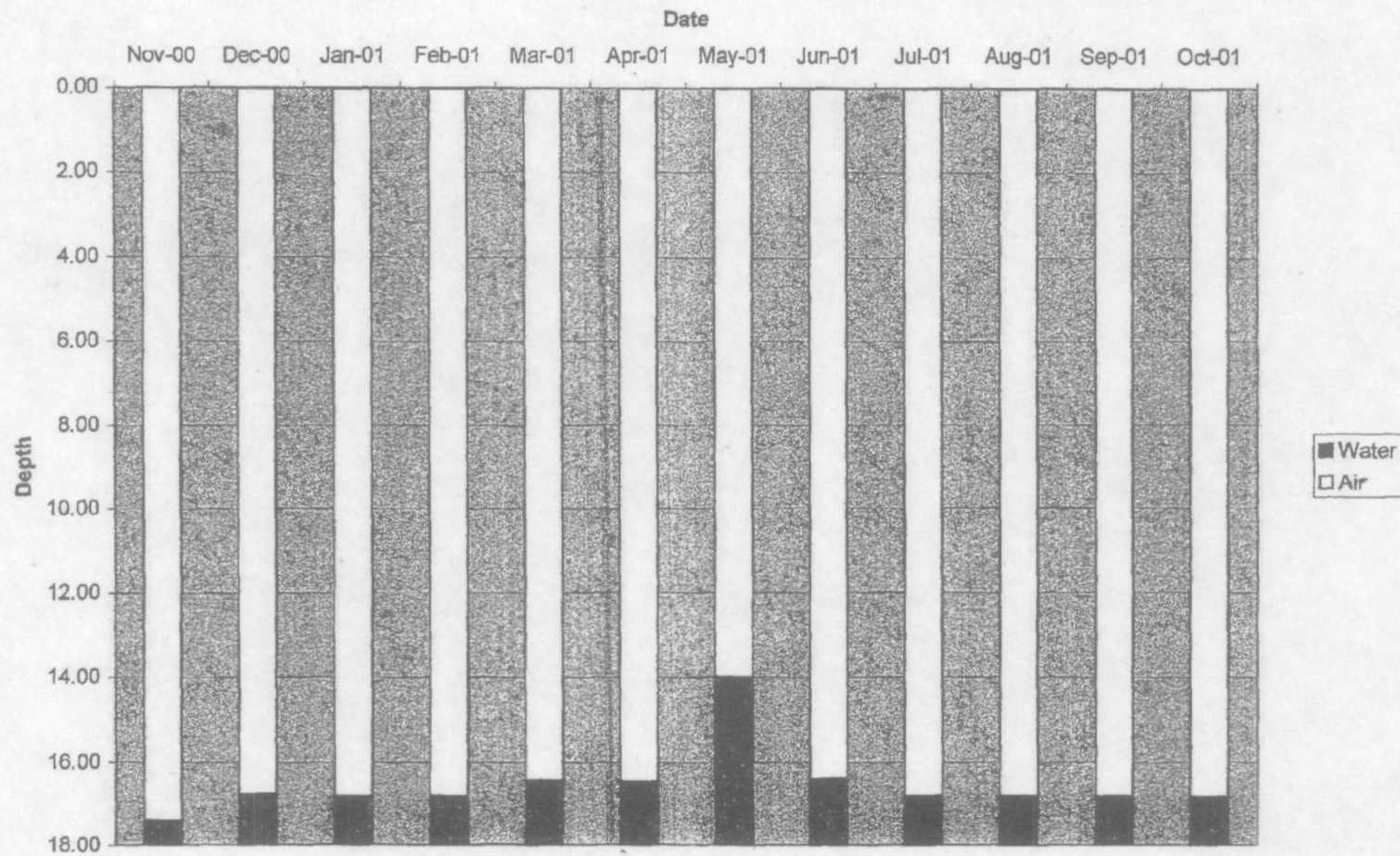
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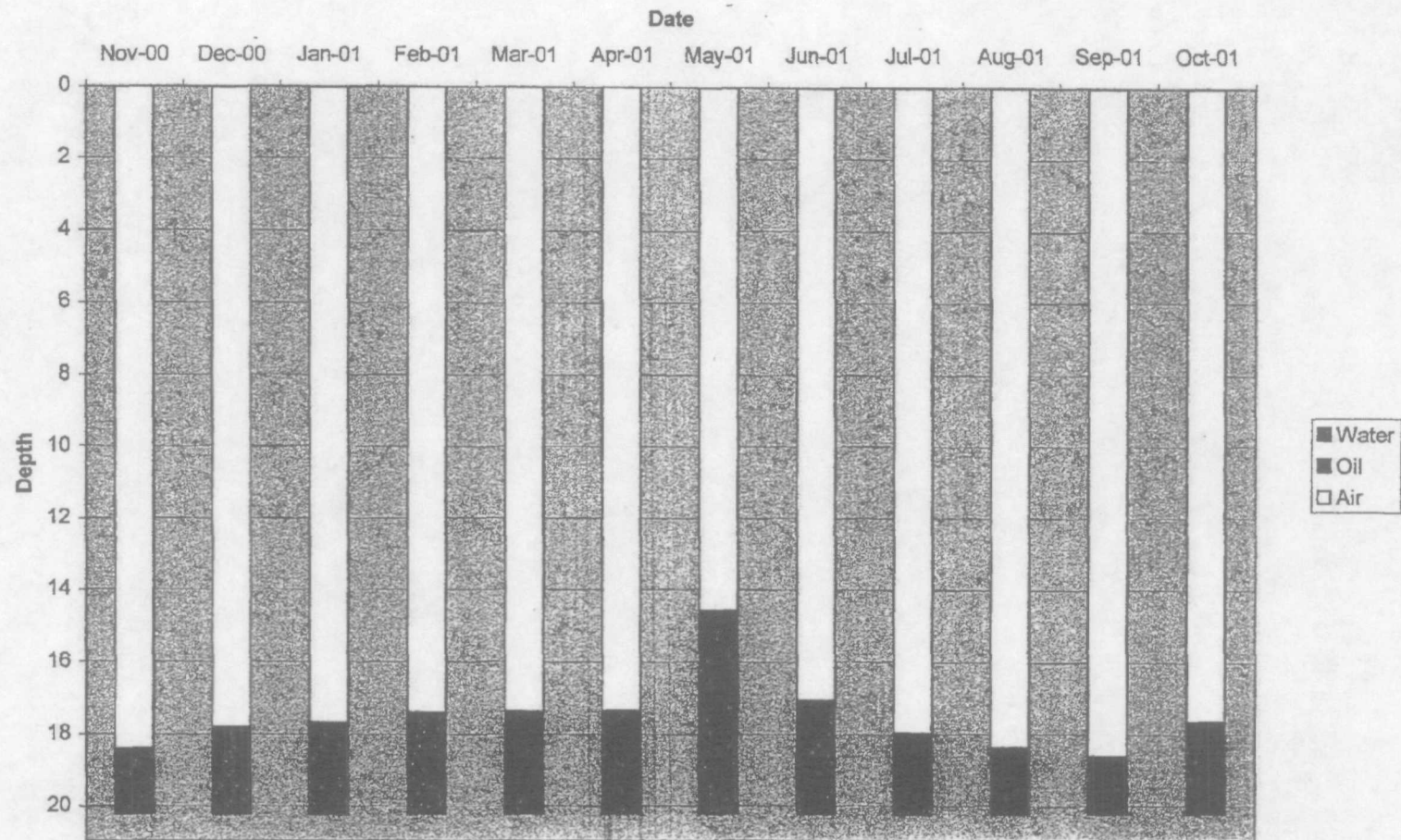
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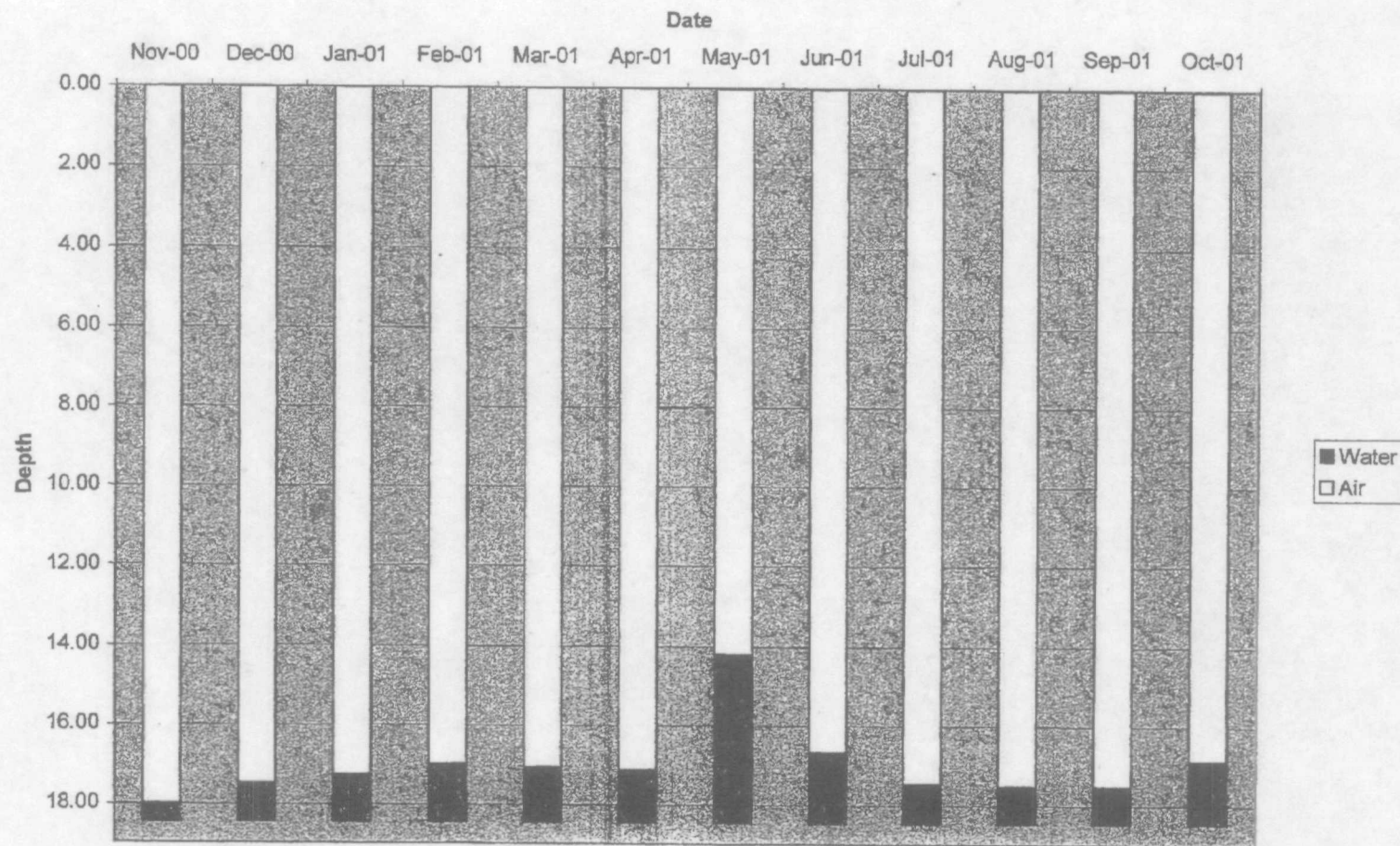
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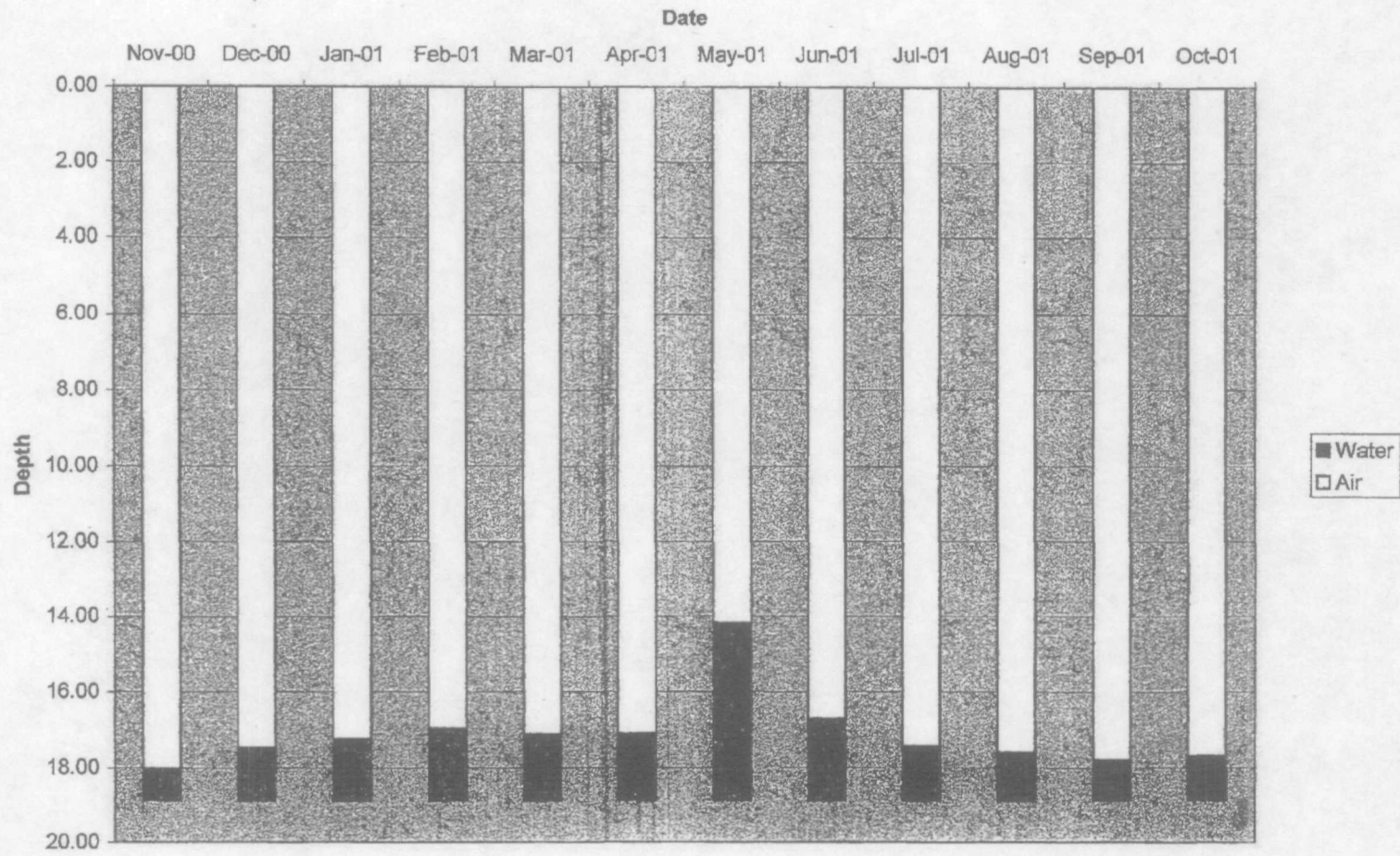
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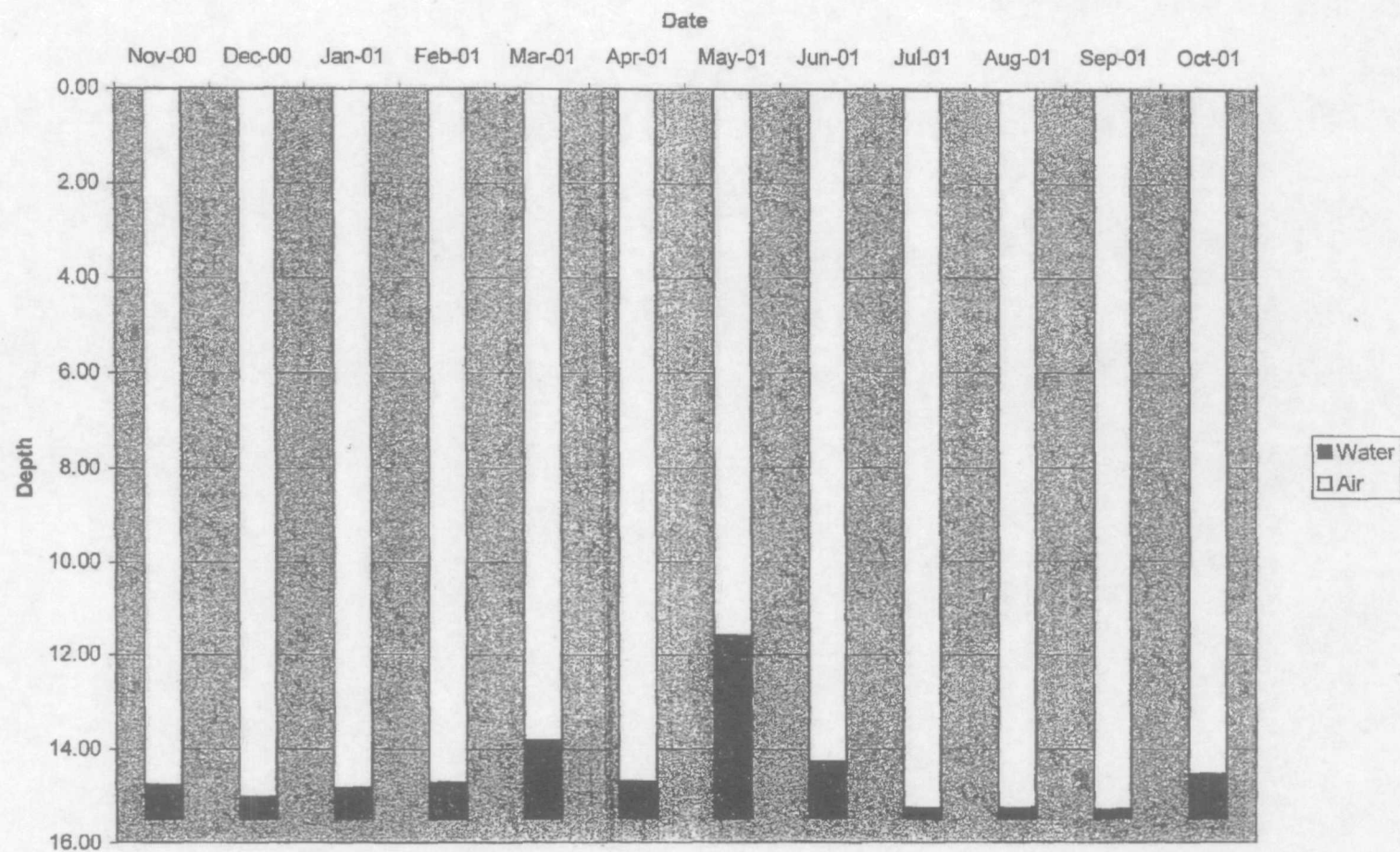
TP-10



TP-11



TP-12



Potlatch

Potlatch Corporation
Resource Management Division
Idaho Region

St. Joe Area Woodlands
P.O. Box 386
St. Maries, Idaho 83861-0386
Telephone (208) 245-4146
Fax (208) 245-6421

December 21, 2001

State of Idaho
Division of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene ID 83814-2648

Attn: Kreg Beck

Re: Avery Landing Remediation and Project Schedule

Dear Kreg:

The Avery landing monthly well monitoring from November 2000 through October of 2001 is attached for your review.

We purchased a "new" oil/water interface meter manufactured by HERON INSTRUMENTS to accurately measure product depth in the wells for the twelve month monitoring period.

The product thickness measured in older wells (EW's, HC's and MW's) over the past twelve month period shows "less" product thickness than previously measured in the wells.

During the monthly well monitoring the St. Joe River water surface was observed for any visible oil sheen and none was observed.

In the spring of 2001 sixty cottonwood, thirty willow and maple, sixty Ponderosa Pine, and twenty five Spruce trees were planted on the remediation site.

On August 9th and 10th, 2001 the St. Joe Oil Company removed 1,290 gallons of stored oil product to the Potlatch Corporation, St. Maries Complex boilers for disposal. This stored oil was extracted by our original remediation system that operated from 1994 through 2000. We filed a "Notification of Regulated Waste Activity" with the environmental Protection Agency to comply with section 3010 of the Resource Conservation and Recovery Act (RCRA). Our EPA I.D. number is IDR000200105.

Potlatch

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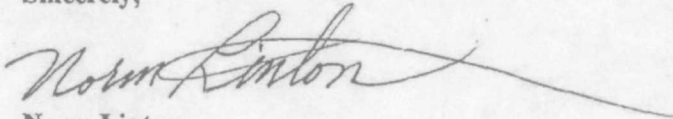
Avery Landing Remediation and Project Schedule Page 2

The Avery Landing Remediation System has been installed for over a year and is functioning as designed. The remediation has effectively stopped the oil product from entering the St. Joe River.

For the next five years (2002-2006) we propose to monitor the existing wells once per year during the month of August or September. In the event measurable oil product of 0.05' or greater is observed in the six 36 inch collection wells, we will use absorption pads to collect and remove the oil from the wells. We will also monitor the St. Joe River for any sign of oil sheen on the water surface and ensure that vegetation is established in accordance with our corrective action plan.

Kreg, if you have any questions feel free to call me at my St. Maries office.

Sincerely,



Norm Linton
Area Manager

NL: br

CC: Greg Weigal - U.S., EPA, Boise
Chip Corsi - IDFG, CDA
Mike McAllister
John Emery
Greg Rapp

BCC: Larry Bentick
Don Green

Site Plan and Groundwater Elevation Contour



Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
CW-1	11/08/00	-	14.51	-	To water - no oil
	12/04/00	-	13.92	-	To water - sheen
	01/16/01	-	13.82	-	Depth to water light sheen
	02/15/01	-	13.46	-	To water - light sheen
	03/16/01	-	13.85	-	To water - light sheen visible
	04/18/01	-	13.70	-	To water - sheen
	05/15/01	-	10.58	-	To water - light sheen visible
	06/20/01	-	13.21	-	To water - light sheen visible
	07/24/01	-	14.12	-	To water - light sheen visible
	08/21/01	-	14.43	-	To water - light sheen present
	09/28/01	-	14.69	-	To water - light sheen
	10/31/01	-	13.75	-	To water - light sheen (15.7 to bottom)
CW-2	11/08/00	-	15.31	-	To water - oil not measureable - sheen
	12/04/00	-	14.74	-	To water - sheen
	01/16/01	-	14.62	-	To water - light sheen
	02/15/01	-	14.30	-	To water - light sheen
	03/16/01	-	14.68	-	To water - light sheen
	04/18/01	-	14.45	-	
	05/15/01	-	11.41	-	To water - light sheen visible
	06/20/01	-	14.01	-	To water - light sheen
	07/24/01	-	14.95	-	To water - light sheen visible
	08/21/01	-	15.23	-	To water - light sheen/rust
	09/28/01	-	15.41	-	To water - light sheen
	10/31/01	-	14.55	-	To water - light sheen (15.85 to bottom)
CW-3	11/08/00	-	13.30	-	To water - no oil
	12/04/00	-	11.81	-	To water - very light sheen
	01/16/01	-	12.35	-	To water - light sheen
	02/15/01	-	12.10	-	To water - light sheen
	03/16/01	-	12.73	-	To water - light sheen
	04/18/01	-	12.35	-	To water - sheen
	05/15/01	-	8.80	-	To water - light sheen
	06/20/01	-	11.87	-	To water - light sheen
	07/24/01	-	12.81	-	To water - light sheen visible
	08/21/01	-	13.18	-	To water - light sheen visible
	09/28/01	-	13.38	-	To water - light sheen, some rust
	10/31/01	-	12.40	-	To water - light sheen (16.1 to bottom)
CW-4	11/08/00	-	12.51	-	To water - sheen visible
	12/04/00	-	11.20	-	To water - sheen
	01/16/01	-	11.56	-	To water - light sheen
	02/15/01	-	11.52	-	To water - light sheen
	03/16/01	-	11.68	-	To water - very light sheen
	04/18/01	-	11.50	-	To water - sheen
	05/15/01	-	8.24	-	To water - very light sheen
	06/20/01	-	10.93	-	To water - light sheen
	07/24/01	-	11.89	-	To water - rusty sheen present
	08/21/01	-	12.40	-	To water - rusty sheen present
	09/28/01	-	12.71	-	To water - rusty sheen
	10/31/01	-	10.83	-	To water - clean (15.60 to bottom)
CW-5	11/08/00	-	12.85	-	To water - oil not measurable - sheen
	12/04/00	-	11.91	-	To water - no measurable oil - sheen
	01/16/01	-	11.81	-	To water - light sheen
	02/15/01	-	11.41	-	To water - light sheen

Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
CW-5 (Continued)	03/16/01	-	11.83	-	To water - very light sheen
	04/18/01	-	11.18	-	To water - sheen
	05/15/01	-	8.50	-	To water - light sheen
	06/20/01	-	11.10	-	To water - very light sheen
	07/24/01	-	12.41	-	To water - light sheen
	08/21/01	-	12.83	-	To water
	09/28/01	-	13.39	-	To water - very light sheen
	10/31/01	-	11.78	-	To water - very light sheen (15.30 to bottom)
CW-6	11/08/00	-	18.21	-	To water - sheen
	12/04/00	-	17.35	-	To water - sheen
	01/16/01	-	17.33	-	To water - light sheen
	02/15/01	-	17.11	-	To water - light sheen
	03/16/01	-	17.26	-	To water - light sheen
	04/18/01	-	17.14	-	To water - sheen
	05/15/01	-	14.11	-	Visible thin layer of oil
	06/20/01	-	16.70	-	Visible thin layer of oil
	07/24/01	-	17.68	-	To water - visible thin layer of oil
	08/21/01	-	18.13	-	To water - visible thin layer of oil
	09/28/01	-	18.42	-	To water - thin layer of oil
	10/31/01	-	17.33	-	To water - thin layer of oil (19.70 to bottom)
EW-1	11/08/00	-	15.91	-	To water - sheen visible
	12/04/00	-	15.30	-	To water - light sheen
	01/16/01	-	15.39	-	To water - light sheen
	02/15/01	-	15.08	-	To water - light sheen
	03/16/01	-	15.45	-	To water
	04/18/01	-	15.45	-	To water - light sheen
	05/15/01	-	12.21	-	To water
	06/20/01	-	14.84	-	To water
	07/24/01	-	15.68	-	To water
	08/21/01	-	16.06	-	To water - light sheen
	09/28/01	-	16.34	-	To water - light sheen
	10/31/01	-	15.38	-	To water - light sheen
EW-2	11/08/00	-	15.25	-	To water - heavy sheen
	12/04/00	14.19	Can't determine	-	Can't determine oil depth - too thick
	01/16/01	14.60	Can't determine	-	To oil - very thick
	02/15/01	14.34	14.36	0.02	Oil present
	03/16/01	14.75	14.78	0.03	Oil present
	04/18/01	14.60	Can't determine	-	Couldn't clean probe
	05/15/01	11.53	11.54	0.01	Oil present - thin layer
	06/20/01	14.10	Can't determine	-	To oil
	07/24/01	14.95	15.00	0.05	To oil
	08/21/01	15.34	15.38	0.04	Oil present
	09/28/01	15.62	15.67	0.05	To oil
	10/31/01	14.62	14.65	0.03	To oil
EW-3	11/08/00	16.42	16.50	0.08	Oil present
	12/04/00	14.42	Can't determine	-	Can't determine oil depth - too thick
	01/16/01	14.80	Can't determine	-	Oil present - can't get thickness
	02/15/01	14.50	Can't determine	-	Oil present
	03/16/01	14.77	14.80	0.03	Oil present
	04/18/01	14.60	Can't determine	-	Couldn't clean probe
	05/15/01	11.38	11.42	0.04	Oil present
	06/20/01	14.13	14.17	0.04	Oil present

Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
EW-3 (Continued)	07/24/01	15.05	15.11	0.06	Oil present
	08/21/01	15.52	15.58	0.06	Oil present
	09/28/01	15.81	15.89	0.08	To oil
	10/31/01	14.60	14.64	0.04	To oil
EW-4	11/08/00	13.75	13.77	0.02	Oil present
	12/04/00	12.64	12.65	0.01	Oil present
	01/16/01	12.74	Can't determine	-	Thick oil present
	02/15/01	12.25	Can't determine	-	To oil
	03/16/01	12.42	Can't determine	-	To oil - very thick
	04/18/01	11.35	Can't determine	-	Couldn't clean probe
	05/15/01	9.01	9.02	0.01	To oil - thin layer
	06/20/01	11.58	11.59	0.005	Oil present
	07/24/01	12.90	12.93	0.03	Oil present
	08/21/01	13.62	13.64	0.02	Oil present
	09/28/01	14.00	14.02	0.02	To oil
	10/31/01	12.55	12.57	0.02	To oil (very thick)
HC-1	11/08/00	-	-	-	Could not find
	12/04/00	-	-	-	Could not find
	01/16/01	-	-	-	Could not find
	02/15/01	-	-	-	Could not find
	03/16/01	-	12.70	-	To water - no oil
	04/18/01	-	12.50	-	To water - clean
	05/15/01	-	9.72	-	To water - some red rust
	06/20/01	-	12.10	-	Water - light red rust
	07/24/01	-	12.91	-	To water - clean
	08/21/01	-	13.27	-	To water - clean
HC-4	09/28/01	-	13.45	-	To water - light red rust present
	10/31/01	-	12.63	-	Red rust present (17.85 to bottom)
	11/08/00	13.68	14.46	0.78	Oil present
	12/04/00	12.97	Can't determine	-	Can't determine oil depth - too thick
	01/16/01	12.81	Can't determine	-	Oil present
	02/15/01	12.51	Can't determine	-	Oil present
	03/16/01	11.91	Can't determine	-	To oil
	04/18/01	12.20	Can't determine	-	Couldn't find probe
	05/15/01	10.48	Can't determine	-	Oil present
	06/20/01	12.15	12.34	0.19	Oil present
HC-5	07/24/01	13.07	13.38	0.31	Oil present
	08/21/01	13.55	14.12	0.57	Oil present
	09/28/01	13.80	14.61	0.81	Oil present
	10/31/01	12.65	13.45	0.80	Oil present (18.13 to bottom)
	11/08/00	-	18.40	-	To water - no oil
	12/04/00	-	17.63	-	To water - no measurable oil - sheen
	01/16/01	-	17.55	-	To water - no oil
	02/15/01	-	17.28	-	To water - no oil
	03/16/01	-	17.24	-	To water
	04/18/01	-	16.98	-	To water - clean
HC-5	05/15/01	-	14.25	-	To water - clean
	06/20/01	-	16.80	-	To water - clean
	07/24/01	-	17.88	-	To water - clean
	08/21/01	-	18.40	-	To water - clean
	09/28/01	-	18.72	-	To water - clean
	10/31/01	-	17.46	-	To water (23.05 to bottom)

Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
MW-5 (Continued)	11/08/00	-	10.80	-	To water - no oil
	12/04/00	-	9.93	-	To water - no oil
	01/16/01	-	9.70	-	To water - no oil
	02/15/01	-	9.35	-	To water - no oil
	03/16/01	-	10.04	-	To water
	04/18/01	-	9.28	-	Clean
	05/15/01	-	6.51	-	Clean
	06/20/01	-	9.20	-	Clean
	07/24/01	-	10.40	-	Clean
	08/21/01	-	10.97	-	Clean water
	09/28/01	-	11.28	-	Clean water
	10/31/01	-	9.92	-	To water (12.83 to bottom)
MW-11	11/08/00	-	-	-	Not tested
	12/04/00	18.40	-	-	Oil to thick - do not test
	01/16/01	17.90	-	-	To oil (thick) - not measurable
	02/15/01	-	-	-	Can't find - deep snow
	03/16/01	-	-	-	Not tested
	04/18/01	15.75	-	-	Couldn't clean probe
	05/15/01	-	-	-	Not tested
	06/20/01	-	-	-	Not tested
	07/24/01	-	-	-	Not tested
	08/21/01	-	-	-	Not tested
	09/28/01	-	-	-	Not tested
	10/31/01	-	-	-	Not tested
TP-1, 2"	11/08/00	-	20.02	-	To water - no oil
	12/04/00	-	19.10	-	To water - sheen
	01/16/01	-	19.16	-	To water - no oil
	02/15/01	-	18.88	-	To water - no oil
	03/16/01	-	19.08	-	To water - light sheen
	04/18/01	-	18.85	-	To water - light sheen
	05/15/01	15.785	15.79	0.005	To thin layer of oil
	06/20/01	-	18.53	-	To water - light sheen
	07/24/01	-	19.46	-	To water - light sheen
	08/21/01	-	19.95	-	To water - light sheen
	09/28/01	-	20.22	-	To water - sheen present
	10/31/01	-	19.08	-	Trace of oil (22.41 to bottom)
TP-1, 4"	11/08/00	-	19.75	-	To water - sheen
	12/04/00	18.83	18.84	0.01	Thin layer of oil
	01/16/01	-	18.92	-	To water - no oil
	02/15/01	-	18.63	-	To water - light sheen
	03/16/01	-	18.82	-	To water - heavy sheen
	04/18/01	-	18.60	-	To water - heavy sheen
	05/15/01	-	15.63	-	Heavy sheen
	06/20/01	-	18.28	-	To water - light sheen
	07/24/01	-	19.20	-	To water - heavy sheen
	08/21/01	-	19.69	-	To water - heavy sheen
	09/28/01	-	19.96	-	To water - heavy sheen
	10/31/01	-	18.85	-	Trace of oil - micro worms (16.98 to bottom)
TP-2	11/08/00	-	14.95	-	To water - no oil
	12/04/00	-	15.37	-	To bottom - no oil - dry well
	01/16/01	-	15.45	-	Dry well

Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
TP-2 (Continued)	02/15/01	-	15.35	-	Dry well
	03/16/01	-	14.61	-	to water
	04/18/01	15.21	Can't determine	-	Couldn't clean probe
	05/15/01	-	12.19	-	To water
	06/20/01	14.85	14.86	0.01	Oil present
	07/24/01	-	15.40	-	Well bottom - sludge no oil
	08/21/01	-	15.40	-	Well bottom - dry trace of oil
	09/28/01	-	15.90	-	well bottom - dry light trace of oil
	10/31/01	-	14.50	-	To water (15.40 to bottom)
TP-3	11/08/00	-	16.45	-	Dry well
	12/04/00	-	16.05	-	Dry well
	01/16/01	-	16.10	-	Dry well
	02/15/01	-	16.12	-	Dry well
	03/16/01	-	15.01	-	To water - light sheen
	04/18/01	-	15.80	-	To water - light sheen
	05/15/01	-	13.28	-	To water - very light sheen
	06/20/01	-	15.58	-	To water - oil globs on probe
	07/24/01	-	16.10	-	Well bottom - dry well/clean
	08/21/01	-	16.10	-	Well bottom - dry trace of oil
	09/28/01	-	16.10	-	Well bottom - dry trace of oil
	10/31/01	-	15.20	-	Trace of oil - micro worms present (16.10 to bottom)
TP-5	11/08/00	-	17.92	-	To water - no oil
	12/04/00	-	16.27	-	To water - no measurable oil - sheen
	01/16/01	-	16.11	-	To water - light sheen
	02/15/01	-	15.76	-	To water - light sheen
	03/16/01	-	15.12	-	To water
	04/18/01	-	15.55	-	Clean
	05/15/01	-	12.73	-	Clean
	06/20/01	-	15.21	-	Clean
	07/24/01	-	16.35	-	Clean
	08/21/01	-	16.86	-	To water - micro worms present
	09/28/01	-	16.98	-	To water - trace of oil
	10/31/01	-	15.63	-	To water (18.10 to bottom)
TP-6	11/08/00	-	15.00	-	Dry well
	12/04/00	-	14.76	-	To water - no oil
	01/16/01	-	14.62	-	Dry well
	02/15/01	-	14.42	-	To water - no oil
	03/16/01	-	14.13	-	To water
	04/18/01	-	14.14	-	Clean
	05/15/01	-	11.62	-	Clean
	06/20/01	-	13.95	-	Clean
	07/24/01	-	14.79	-	Specks of oil
	08/21/01	-	14.95	-	Well bottom - dry trace of oil
	09/28/01	-	14.98	-	Well bottom - oily mud
	10/31/01	-	14.38	-	To water (14.98 to bottom)
TP-7	11/08/00	-	17.30	-	Dry well
	12/04/00	-	17.05	-	Bottom - dry well
	01/16/01	-	17.00	-	Dry well
	02/15/01	-	17.10	-	Dry well
	03/16/01	-	14.73	-	To water - red rust in water
	04/18/01	-	15.38	-	Clean
	05/15/01	-	14.36	-	To water - red rust color

Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
	06/20/01	-	16.96	-	Dry well - wet red rust
	07/24/01	-	16.98	-	Well bottom - dry
	08/21/01	-	16.98	-	Well bottom - dry
	09/28/01	-	16.98	-	Well bottom - dry
	10/31/01	-	16.81	-	To water - micro worms (16.98 to bottom)
TP-8	11/08/00	-	17.40	-	Dry well
	12/04/00	-	16.76	-	Bottom - dry well
	01/16/01	-	16.81	-	Dry well
	02/15/01	-	16.80	-	Dry well
	03/16/01	-	16.42	-	To water - oil skim present
	04/18/01	-	16.45	-	To water - skim of oil
	05/15/01	-	14.00	-	To water - skim of oil
	06/20/01	-	16.39	-	To water - skim of oil
	07/24/01	-	16.82	-	Well bottom - dry
	08/21/01	-	16.82	-	Well bottom - dry
	09/28/01	-	16.82	-	Well bottom - dry
	10/31/01	-	16.82	-	Dry - clean
TP-9	11/08/00	-	18.41	-	Water - no oil
	12/04/00	-	17.80	-	To water - no oil
	01/16/01	-	17.67	-	To water - no oil
	02/15/01	-	17.38	-	To water - no oil
	03/16/01	17.35	17.42	0.04	Oil present - very thin oil
	04/18/01	-	17.34	-	Oil present - thin oil
	05/15/01	14.58	14.585	0.005	To thin layer of oil - micro worms present
	06/20/01	17.05	17.055	0.005	Thin layer of oil
	07/24/01	17.95	17.98	0.03	Oil present
	08/21/01	18.35	18.39	0.04	Oil present
	09/28/01	18.61	18.64	0.03	Oil present - micro worms present
	10/31/01	17.66	17.67	0.01	Oil present (19.25 to bottom)
TP-10	11/08/00	-	18.00	-	Dry well
	12/04/00	-	17.48	-	To water - no oil
	01/16/01	-	17.24	-	To water - no oil
	02/15/01	-	16.96	-	To water - no oil
	03/16/01	-	17.03	-	To water
	04/18/01	-	17.10	-	Clean
	05/15/01	-	14.20	-	To water
	06/20/01	-	16.64	-	To water
	07/24/01	-	17.45	-	To water - micro white worms
	08/21/01	-	17.50	-	Well bottom - light sludge - oily
	09/28/01	-	17.50	-	Well bottom - dry
	10/31/01	-	16.84	-	To water - micro worms (17.50 to bottom)
TP-11	11/08/00	-	18.00	-	Dry well
	12/04/00	-	17.46	-	To water - no oil
	01/16/01	-	17.23	-	To water - no oil
	02/15/01	-	16.97	-	To water - no oil
	03/16/01	-	17.11	-	To water - very light sheen
	04/18/01	-	17.10	-	To water - very light sheen
	05/15/01	-	14.18	-	To water - light sheen
	06/20/01	-	16.70	-	To water
	07/24/01	-	17.43	-	To water - micro white worms present - no oil
	08/21/01	-	17.58	-	To water - micro white worms present
	09/28/01	-	17.80	-	To water - light sheen present

Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
	10/31/01	-	17.70	-	To water - micro worms (17.90 to bottom)
TP-12 (Continued)	11/08/00	-	14.76	-	To water - no oil
	12/04/00	-	15.01	-	To water - no measureable oil - sheen
	01/16/01	-	14.83	-	To water - no oil
	02/15/01	-	14.72	-	To water - no oil
	03/16/01	-	13.82	-	To water
	04/18/01	-	14.70	-	To water - light sheen
	05/15/01	-	11.60	-	Light sheen
	06/20/01	-	14.26	-	Very light sheen
	07/24/01	-	15.25	-	Well bottom - sandy sludge with oil
	08/21/01	-	15.25	-	Well bottom - sludge with oil
	09/28/01	-	15.28	-	Well bottom - oil sludge
	10/31/01	-	14.53	-	To water - trace of oil (15.30 to bottom)



STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

Received
JAN 21 2002
St. Joe Woodlands

2110 Ironwood Parkway • Coeur d'Alene, Idaho 83814-2648 • (208) 769-1422

Dirk Kempthorne, Governor
C. Stephen Alfred, Director

January 18, 2002

Norm Linton, Area Manager
Potlatch Corporation
P.O. Box 386
St. Maries, ID 83861-0386

RE: Avery Landing Remediation

Norm
Dear Mr. Linton:

In response to your December 21, 2001 letter, the Department of Environmental Quality (DEQ) agrees with your proposal to monitor the existing wells on site annually for the next five years. DEQ also concurs that free product should be recovered if product thickness is 0.6 inches in thickness or greater. In addition, we would recommend that any sheen appearing in the recovery wells be removed with the use of absorbent pads, after monitoring has been completed. At the end of the five-year period, we will coordinate with you to evaluate the site and determine if continued monitoring or other remediation activities need to occur.

As you are aware, the ultimate goal of this project is to keep petroleum out of the St. Joe River. If it is determined that petroleum is again entering the river from this site, appropriate remedial actions must be taken by Potlatch to stop such a release.

Thank you for your cooperation in the cleanup of this site and please call if you have any questions or concerns in regard to this decision.

Sincerely,

Kreg Beck
Ground Water and Remediation Project Specialist

c: Greg Weigel, US EPA, 1435 N. Orchard, Boise, ID, 83706

XCI: Mike Mcallister

: John Emery

: Greg Rapp

BXC: Larry Bentick

: Don Green

Potlatch

Potlatch Corporation
Resource Management Division

St. Joe Woodlands
P.O. Box 386
St. Maries, ID 83861-0386
Telephone (208) 245-4146
Fax (208) 245-6421

October 30, 2002

State of Idaho
Division of Environmental Quality
2110 Ironwood Parkway
Coeur d' Alene, Idaho 83814-2648

Attn: Kreg Beck

Re: Avery Landing Monitoring - 2002

Dear Kreg:


The Annual Monitoring of existing wells on the Avery Landing was completed on October 4, 2002. This monitoring is in accordance our agreement dated, January 18, 2002. A copy of the well monitoring log is attached for your review and files. The free product (Oil) thickness in the six collection wells is a light sheen on top of the water. The removal of the sheen was not attempted with absorbent pads due to the very small amount of product visible in the wells.

The St. Joe River adjacent to the Remediation Area was inspected for any visible presence of product or oil sheen on the water and none was observed. The vegetation appears to be satisfactory at this time.

The Avery Landing Remediation System has been installed for nearly two years and has effectively stopped the free product from entering the St. Joe River.

Kreg, if you have any Questions feel free to call me at my St. Maries office.

Sincerely,


Norm Linton
Area Manager

CC: Greg Weigal - U.S., EPA, Boise
Chip Corsi - IDFG, CDA
Mike McAllister

John Emery
Greg Rapp

Avery Well Monitoring

Date: 10/4/2002

Measurements By: Norm Linton, Dan Green

Well	Depth to Oil	Depth to Water	Oil Thickness	Comments
HC-1	—	13.21	—	To water Trace Red Rust
CW-1	—	14.35	—	To water, light sheen
EW-1	—	15.97	—	To water, light sheen
CW-2	—	15.11	—	To water, Trace Red Rust, light sheen
EW-2	15.25	15.28	0.03	To Oil
CW-3	—	13.09	—	To water, light sheen, Red Rust
EW-3	15.43	15.50	0.07	To Oil
CW-4	—	12.31	—	To water light sheen
EW-4	13.29	13.31	0.02	To Oil
CW-5	—	12.76	—	To water, light sheen
MW-5	—	10.90	—	Clean Water
TP-6	—	15.00	—	Well Bottom - Dry
TP-5 2"	—	16.78	—	Rust in Water
HC-5	—	18.18	—	Clean Water
TP-12	—	15.18	—	To Water Trace of Oil
HC-4	13.51	13.60	0.09	Black Oil
TP-2	—	15.40	—	Well Bottom - oil sludge 1/4 thick
TP-3	—	16.10	—	Well Bottom Dry Trace of Oil
TP-1,4"	—	19.57	—	Light sheen - worms present
TP-1,2"	—	19.81	—	To water sheen present
CW-6	—	18.03	—	To water light sheen white worms present
MW-11	—	—	—	not Tested
TP-7	—	17.00	—	Well Bottom Dry
TP-8	—	16.82	—	Well Bottom Dry
TP-9	—	18.30	—	To water - Trace of oil - white worms
TP-10	—	17.50	—	Well Bottom Dry
TP-11	—	17.52	—	To water, Trace of oil - white worms

Potlatch

Potlatch Corporation
Resource Management Division

St. Joe Woodlands
P.O. Box 386
St. Maries, ID 83861-0386
Telephone (208) 245-4146
Fax (208) 245-6421

December 4, 2003

State of Idaho
Division of Environmental Quality
2110 Ironwood Parkway
Coeur d' Alene, ID 83814-2648

Attention: Kreg Beck

RE: Avery Landing Monitoring – 2003

Dear Kreg:

The yearly Monitoring of existing wells on the Avery Landing was completed on September 26, 2003. This monitoring is in accordance to our agreement dated, January 18, 2002. A copy of the well monitoring log is attached for your review and files. The free product (Oil) thickness in the six collection wells is a light sheen with some red rust present on top of the water.

The St. Joe River adjacent to the Remediation Area was inspected for any visible presence of free product or oil sheen on the water and none was observed. The vegetation appears to be fairly limited at this time and the replanting of some cottonwood is planned for the spring of 2004.

The Avery Landing Remediation System has been installed for nearly three years and has effectively stopped the free product (oil) from entering the St. Joe River.

Kreg, if you have any questions, feel free to call me at my St. Maries office.

Sincerely,



Norm Linton
Area Manager

NL:sh

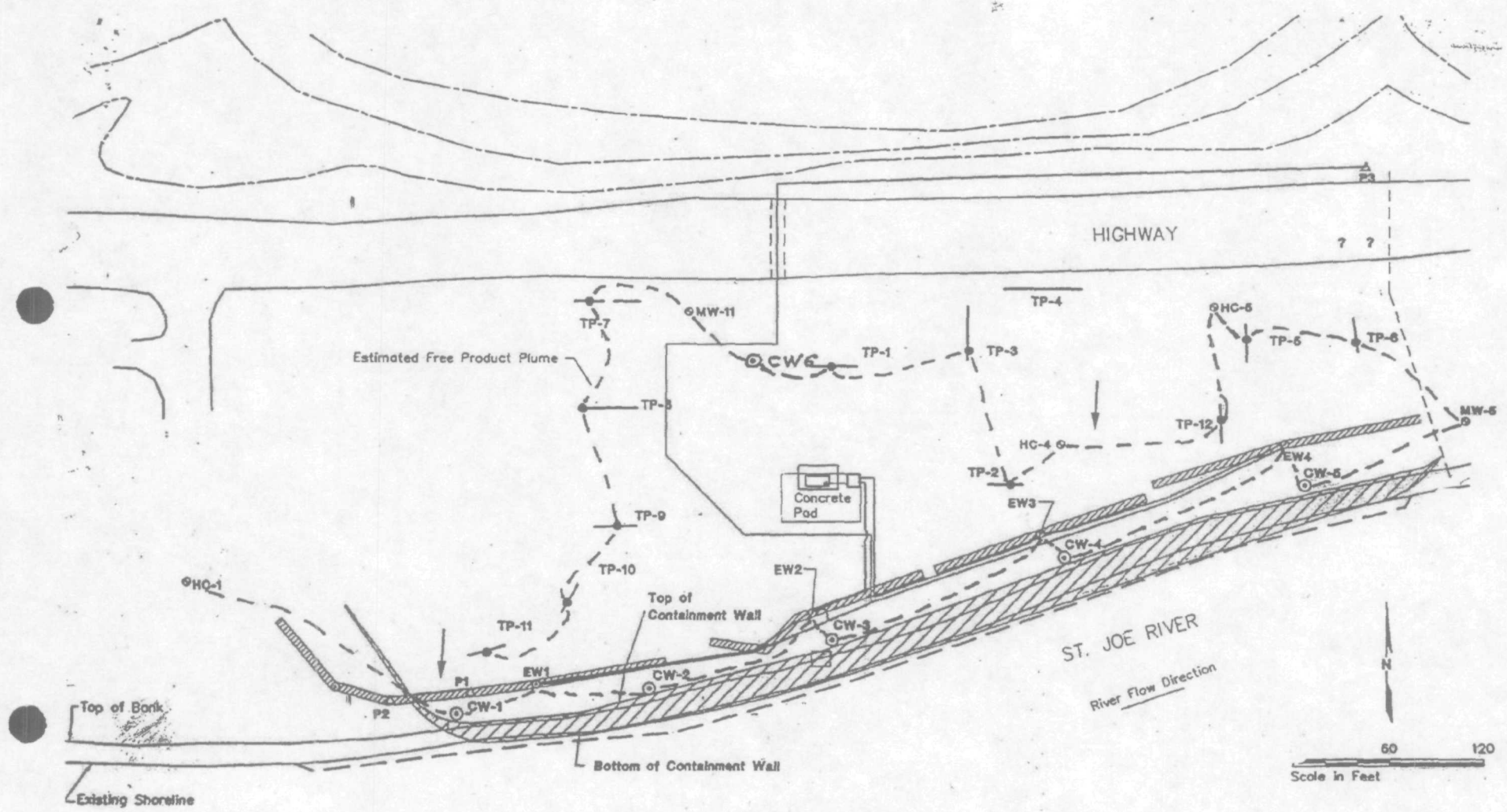
cc: Greg Weigal – U.S., EPA, Boise
Chip Corsi – IDFG, CDA
Greg Rapp

Avery Well Monitoring

Date: 9/26/03

Measurements By: Norm Linton, Don Green

Well	Depth to Oil	Depth to Water	Oil Thickness	Comments
HC-1	~	13.41	—	To water Trace Red Rust
CW-1	~	14.59	~	To water, light sheen of oil
EW-1	~	16.32	~	To water, light sheen, white worms
CW-2	~	15.33	~	To water, Red Rust, light sheen
EW-2	15.59	15.62	0.03	Black Oil
CW-3	~	13.29	~	To water, Red Rust, light sheen
EW-3	15.85	15.91	0.06	Black Oil
CW-4	~	12.63	~	To water, light sheen
EW-4	13.95	13.97	0.02	Black Oil
CW-5	~	13.35	~	To water, light sheen.
MW-5	~	11.15	~	clean water
TP-6	~	15.00	~	Dry well
TP-5	~	16.97	~	Rust in water
HC-5	~	18.55	~	clean water
TP-12	~	14.92	~	To water micro white worms
HC-4	14.40	14.45	0.05	Black Oil
TP-2	~	15.71	~	well bottom
TP-3	~	16.10	~	well bottom trace oil
TP-1.4"	~	19.91	~	To water micro white worms present
TP-1.2"	~	20.13	~	To water sheen oil present
CW-6	~	18.31	~	To water light sheen
MW-11	~	not tested	~	
TP-7	~	17.00	~	Dry well
TP-8	~	16.77	~	To water micro white worms present
TP-9	~	18.56	~	To water white micro worms no oil
TP-10	~	17.50	~	Dry well
TP-11	~	17.71	~	To water - trace of oil - micro white worms



Exploration Location and Number

- MW-4 Monitoring Well
- EW-1 Extraction Well
- △ P1 Piezometer

- Approximate Groundwater Flow Direction
- ▨ Existing Extraction Trench
- - - Free Product Plume Area
- - - Retainer Block/Sand Bag Cofferdam

- TP-1 Test Pit Location and Number
- TP-1 Test Pit Monitoring Well Location and Number
- ⊙ CW-1 Collection Well Location and Number
- ▨ Proposed Containment Wall - 750'

HARTGROWSE
J-2296-07 7/01
Figure 4

Potlatch

Potlatch Corporation
Resource Management Division

St. Joe Woodlands
P.O. Box 386
St. Maries, ID 83861-0386
Telephone (208) 245-4146
Fax (208) 245-6421

September 24, 2004

State of Idaho
Division of Environmental Quality
2110 Ironwood Parkway
Coeur d' Alene, ID 83814-2648

Attention: Mark Kalbaugh

RE: Avery Landing Monitoring – 2004

Dear Mark:

The yearly Monitoring of existing wells on the Avery Landing was completed on September 23, 2004. This monitoring is in accordance to our agreement dated, January 18, 2002. A copy of the well monitoring log is attached for your review and files. The free product (Oil) thickness in the six collection wells is nearly non-existent with red rust present on top of the water.

The St. Joe River adjacent to the Remediation Area was inspected for any visible presence of free product or oil sheen on the water and none was observed. The vegetation appears to be progressing adequately at this time.

The Avery Landing Remediation System has been installed for nearly four years and has effectively stopped the free product (oil) from entering the St. Joe River.

Mark, we appreciate you taking the time to participate in the monitoring this year and if you have any questions, feel free to call me at my St. Maries office.

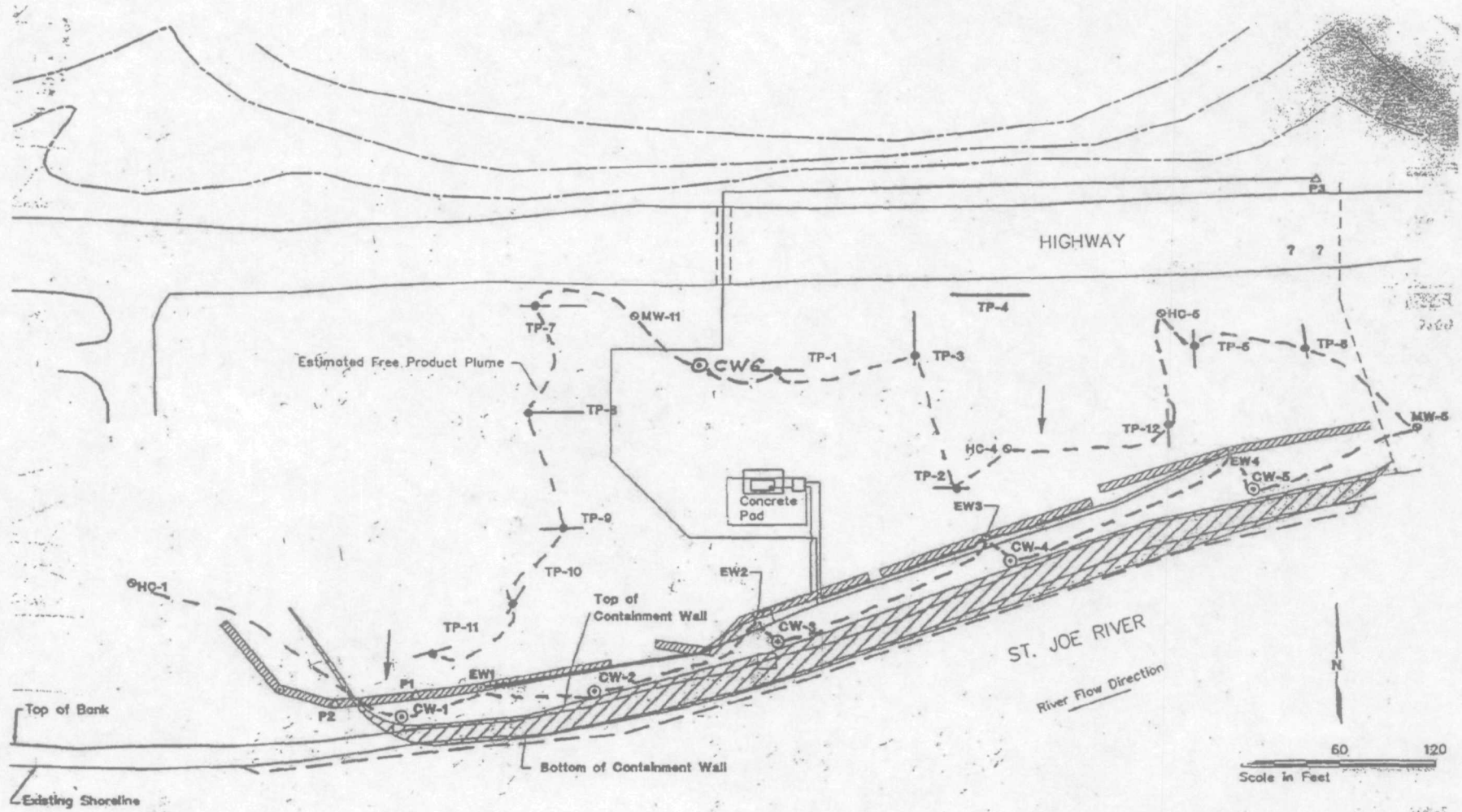
Sincerely,



Norm Linton
Area Manager

NL:sh

cc: Greg Weigal – U.S., EPA, Boise
Chip Corsi – IDFG, CDA
Greg Rapp



Exploration location and Number

- MW-1 Monitoring Well
- EW-1 Extraction Well
- △ P1 Piezometer

- ← Approximate Groundwater Flow Direction
- ▨ Existing Extraction Trench
- - - Free Product Plume Area
- - - Retainer Block/Sand Bag Cofferdam

- TP-1 Test Pit Location and Number
- TP-1 Test Pit Monitoring Well Location and Number
- ◎ CW-1 Collection Well Location and Number
- ▨ Proposed Containment Wall - 750'

HARGREAVES
 J-2296-01 7/00
 Figure 4

Avery Well Monitoring

Date: 9/23/2004

Measurements By: Norm Linton, Jim Green, Mark Karbaugh DER

Well	Depth to Oil	Depth to Water	Oil Thickness	Comments
HC-1	—	12.90	—	Clean water, Red Rust Present
CW-1	—	14.06	—	To water light sheen Oil, Red Rust
EW-1	—	15.80	—	To water, white Worms
CW-2	—	14.83	—	To water, Red Rust Present
EW-2	15.04	15.07	0.03	Black Oil
CW-3	—	12.80	—	To water, Red Rust present
EW-3	15.12	16.14	0.02	Black Oil
CW-4	—	11.67	—	To water, slight Red Rust
EW-4	12.75	12.76	0.01	Black Oil
CW-5	—	12.24	—	To water - clean
MW-5	—	10.52	—	Clean Water
TP-6	—	14.64	—	To water light sheen
TP-5	—	16.22	—	To water Red Rust present
HC-5	—	17.76	—	Clean Water
TP-12	—	14.76	—	To clean water
HC-4	13.50	13.65	0.15	Black Oil
TP-2	15.40	Well Bottom 15.41	0.01	Black Oil
TP-3	—	15.86	—	To water micro white worms
TP-1,4"	—	19.18	—	To water micro white worms
TP-1,2"	—	19.42	—	To water micro white worms
CW-6	—	17.60	—	To water Red Rust worms
MW-11	—	—	—	not tested
TP-7	—	17.00	—	Dry Well
TP-8	—	16.52	—	To water micro white worms
TP-9	—	17.99	—	To water, light sheen, white worms
TP-10	—	17.50	—	Dry Well
TP-11	—	17.46	—	To water, oily sludge at the bottom

Potlatch

RECEIVED
OCT 06 2005
DEQ-Coeur d'Alene
Regional Office

Potlatch Corporation
Resource Management Division

St. Joe Woodlands
P.O. Box 386
St. Maries, ID 83861-0386
Telephone (208) 245-4146
Fax (208) 245-6421

October 3, 2005

State of Idaho
Division of Environmental Quality
2110 Ironwood Parkway
Coeur d' Alene, ID 83814-2648

Attention: Mark Kalbaugh

RE: Avery Landing Monitoring - 2005

Dear Mark:

The yearly ~~Monitoring of existing wells on~~ the Avery Landing was completed on September 29, 2005. This monitoring is in accordance to our agreement dated, January 18, 2002. A copy of the well monitoring log is attached for your review and files. The free product (Oil) thickness in the six collection wells is nearly non-existent with red rust present on top of the water.

The St. Joe River adjacent to the Remediation Area was inspected for any visible presence of free product or oil sheen on the water and a small amount of oil seepage and oil sheen was observed along the river bank near collection well #3. It is my observation that the St. Joe River water level and subsequent water table are the lowest I have observed since the completion of the remediation project in 2000. The water table may have dropped below the bottom of the barrier liner which would allow the oil to seep under the barrier liner and migrate to the river.

The Avery Landing Remediation System has been installed for nearly five years and this is the first observation of any oil product or oil sheen along the river bank of the remediation project area.

Mark, we would like to meet with you and others as you feel appropriate to inspect the remediation project area and oil seepage area as soon as possible. We would appreciate any expertise that yourself and the Department of Environmental Quality could bring to this project to help mitigate this oil seepage.

I will plan to call you and schedule a time to meet at the project site in Avery. If you have any questions, please feel to call me at (208) 245-6425 in St. Maries.

Sincerely,

A handwritten signature in black ink, appearing to read "Norm Linton", with a stylized flourish at the end.

Norm Linton
Area Manager

NL:sh

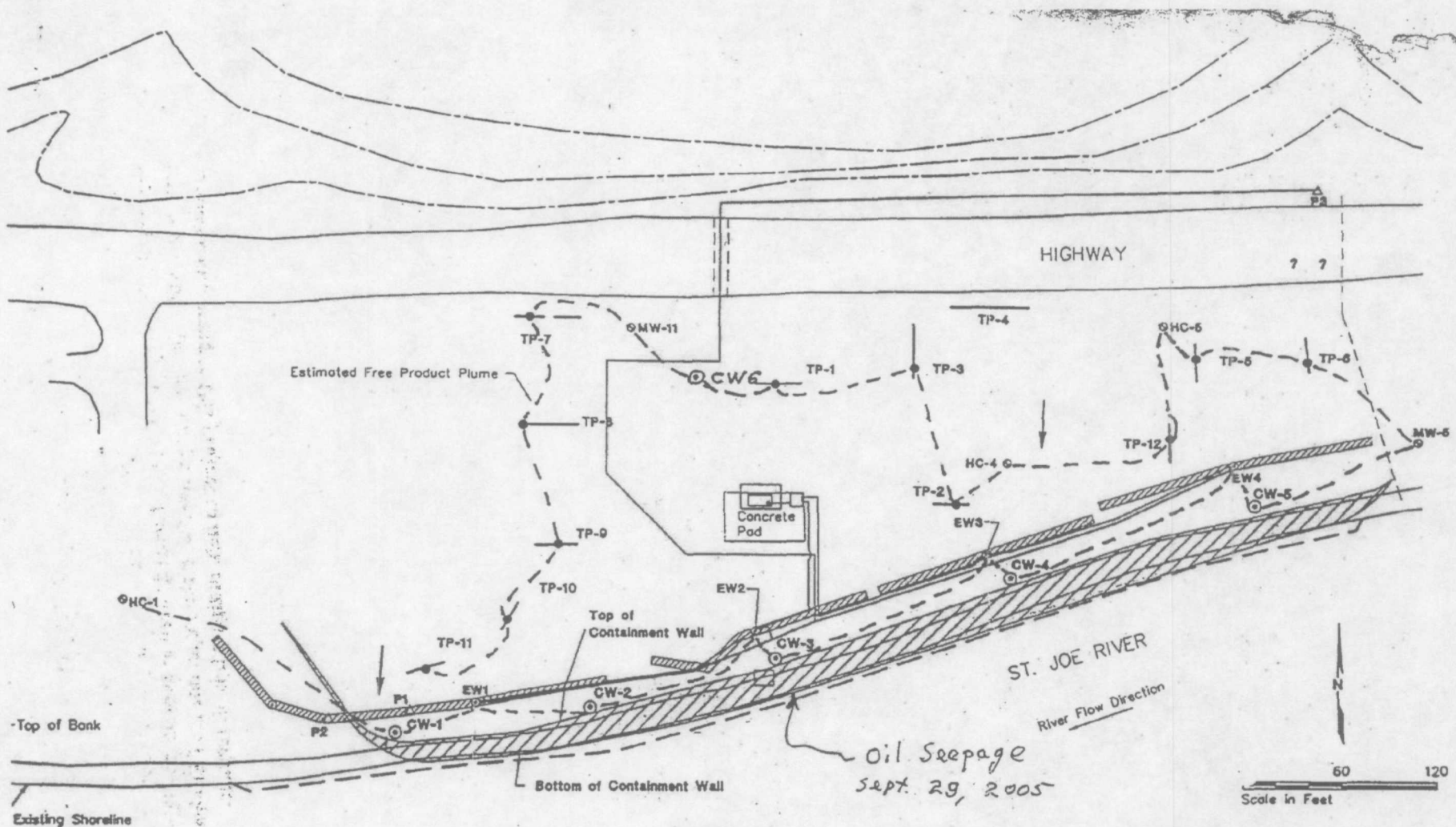
cc: Greg Weigal - U.S., EPA, Boise
Chip Corsi - IDFG, CDA
Greg Rapp
Kevin McHail
Steve Smith

Avery Well Monitoring

Date: <u>9/29/05</u>				
Measurements By: <u>Norm Hinton</u> , <u>Greg Rapp</u>				
Well	Depth to Oil	Depth to Water	Oil Thickness	Comments
HC-1	—	13.40	—	To water / Red Rust
CW-1	—	14.68	—	To water Red Rust / Lt sheen
EW-1	—	16.47	—	To water worms
CW-2	—	15.35	—	To water / light sheen
EW-2	15.38	15.39	.01	Black Oil
CW-3	—	13.31	—	To water / light sheen / Rust
EW-3	15.87	15.85	.02	Black Oil
CW-4	—	12.87	—	To water / light sheen / Rust
EW-4	14.00	14.06	.01	Black Oil
CW-5	—	13.49	—	To water
MW-5	—	11.23	—	To water
TP-6	—	14.36	—	Dry Well
TP-5	—	16.92	—	Water / sludge at bottom
HC-5	—	23.06	—	Dry Well - Bottom
TP-12	—	14.94	—	To water / white micr worms
HC-4	14.50	14.74	.04	Black Oil
TP-2	15.19	15.20	.01	Black Oil
TP-3	—	16.16	—	Dry Well some sludge / worms
TP-1,4"	—	19.89	—	To water white worms
TP-1,2"	—	20.14	—	To water Red Rust Present
CW-6	—	18.33	—	To water Red Rust / White worms
MW-11	—	—	—	Not Tested
TP-7	—	17.00	—	Dry
TP-8	—	16.66	—	To water / white worms
TP-9	—	17.58	—	To water White worms
TP-10	—	17.50	—	Dry well
TP-11	—	12.63	—	To water / sludge at bottom

Note: Oil sheen & oil seepage along river bank near CW 3 and the wood plank platform in the River. River level very low and the water table may have dropped below the Barrier liner which has allowed the oil to seep under the liner and into the River.

Norm Hinton Sept 29, 2005



Exploration Location and Number

- MW-4 Monitoring Well
- EW-1 Extraction Well
- △ P1 Piezometer

- ← Approximate Groundwater Flow Direction
- ▨ Existing Extraction Trench
- - - Free Product Plume Area
- - - Retainer Block/Sand Bag Cofferdam

- TP-1 Test Pit Location and Number
- TP-1 Test Pit Monitoring Well Location and Number
- CW-1 Collection Well Location and Number
- ▨ Proposed Containment Wall - 750'

HARD CROWSER
J-2298-07 7/00
Figure 4

RECEIVED

JAN 09 2002

**DEQ-Coeur d'Alene
Regional Office**

Potlatch

**Potlatch Corporation
Resource Management Division
Idaho Region**

St. Joe Area Woodlands
P.O. Box 386
St. Maries, Idaho 83861-0386
Telephone (208) 245-4146
Fax (208) 245-6421

December 21, 2001

**State of Idaho
Division of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene ID 83814-2648**

Attn: Kreg Beck

Re: Avery Landing Remediation and Project Schedule

Dear Kreg:

The Avery landing monthly well monitoring from November 2000 through October of 2001 is attached for your review.

We purchased a "new" oil/water interface meter manufactured by HERON INSTRUMENTS to accurately measure product depth in the wells for the twelve month monitoring period.

The product thickness measured in older wells (EW's, HC's and MW's) over the past twelve month period shows "less" product thickness than previously measured in the wells.

During the monthly well monitoring the St. Joe River water surface was observed for any visible oil sheen and none was observed.

In the spring of 2001 sixty cottonwood, thirty willow and maple, sixty Ponderosa Pine, and twenty five Spruce trees were planted on the remediation site.

On August 9th and 10th, 2001 the St. Joe Oil Company removed 1,290 gallons of stored oil product to the Potlatch Corporation, St. Maries Complex boilers for disposal. This stored oil was extracted by our original remediation system that operated from 1994 through 2000. We filed a "Notification of Regulated Waste Activity" with the environmental Protection Agency to comply with section 3010 of the Resource Conservation and Recovery Act (RCRA). Our EPA I.D. number is IDR000200105.

Potlatch

Potlatch Corporation
Resource Management Division
Idaho Region

St. Joe Area Woodlands
P.O. Box 386
St. Maries, Idaho 83861-0386
Telephone (208) 245-4146
Fax (208) 245-6421

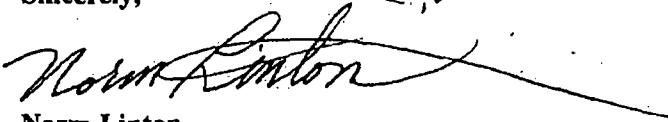
Avery Landing Remediation and Project Schedule Page 2

The Avery Landing Remediation System has been installed for over a year and is functioning as designed. The remediation has effectively stopped the oil product from entering the St. Joe River.

For the next five years (2002-2006) we propose to monitor the existing wells once per year during the month of August or September. In the event measurable oil product of 0.05' or greater is observed in the six 36 inch collection wells, we will use absorption pads to collect and remove the oil from the wells. We will also monitor the St. Joe River for any sign of oil sheen on the water surface and ensure that vegetation is established in accordance with our corrective action plan.

Kreg, if you have any questions feel free to call me at my St. Maries office.

Sincerely,

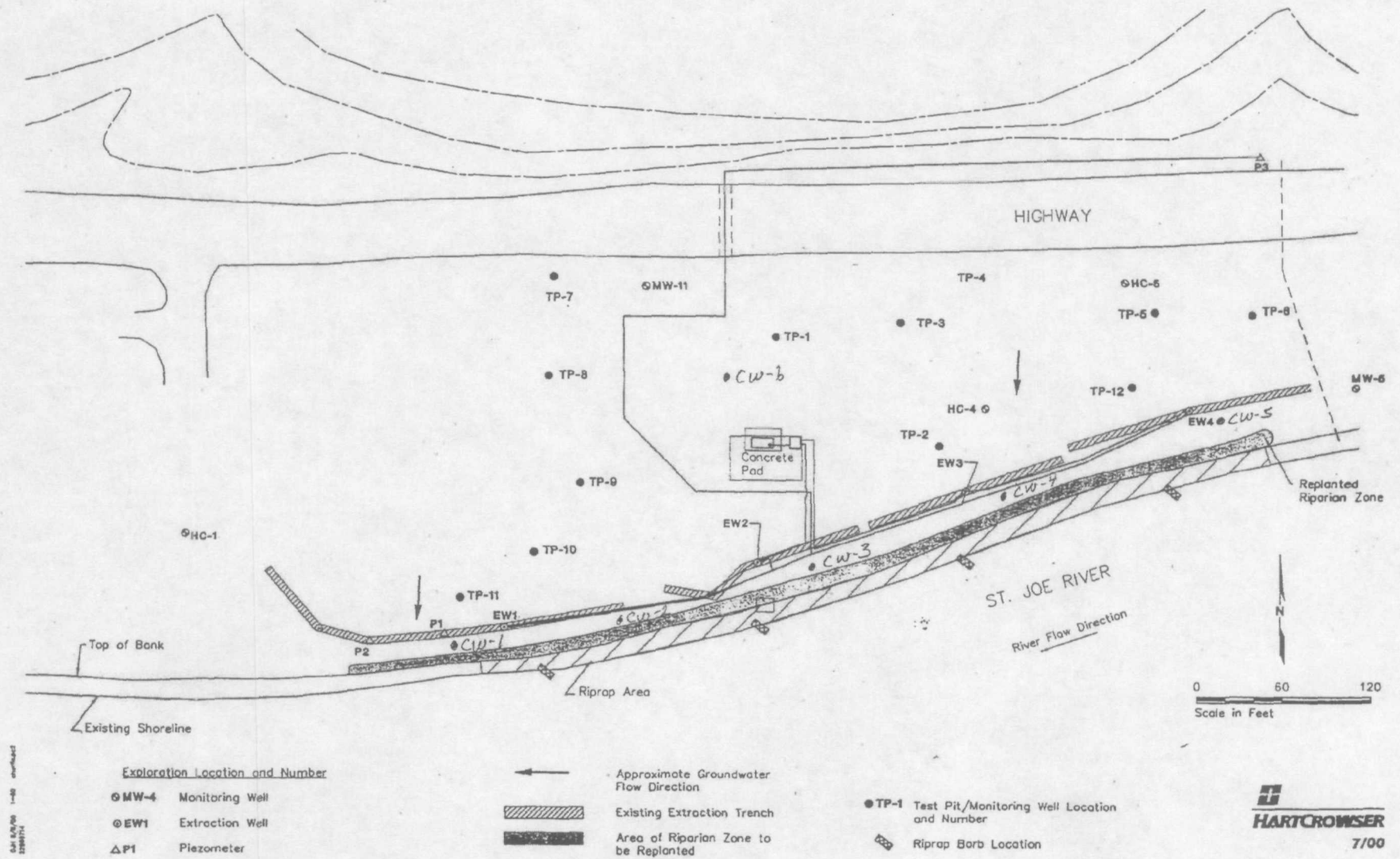


Norm Linton
Area Manager

NL: br

CC: Greg Weigal - U.S., EPA, Boise
Chip Corsi - IDFG, CDA
Mike McAllister
John Emery
Greg Rapp

Avery Landing Remediation Site



Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
CW-1	11/08/00	-	14.51	-	To water - no oil
	12/04/00	-	13.92	-	To water - sheen
	01/16/01	-	13.82	-	Depth to water light sheen
	02/15/01	-	13.46	-	To water - light sheen
	03/16/01	-	13.85	-	To water - light sheen visible
	04/18/01	-	13.70	-	To water - sheen
	05/15/01	-	10.58	-	To water - light sheen visible
	06/20/01	-	13.21	-	To water - light sheen visible
	07/24/01	-	14.12	-	To water - light sheen visible
	08/21/01	-	14.43	-	To water - light sheen present
	09/28/01	-	14.69	-	To water - light sheen
	10/31/01	-	13.75	-	To water - light sheen (15.7 to bottom)
CW-2	11/08/00	-	15.31	-	To water - oil not measureable - sheen
	12/04/00	-	14.74	-	To water - sheen
	01/16/01	-	14.62	-	To water - light sheen
	02/15/01	-	14.30	-	To water - light sheen
	03/16/01	-	14.68	-	To water - light sheen
	04/18/01	-	14.45	-	
	05/15/01	-	11.41	-	To water - light sheen visible
	06/20/01	-	14.01	-	To water - light sheen
	07/24/01	-	14.95	-	To water - light sheen visible
	08/21/01	-	15.23	-	To water - light sheen/rust
	09/28/01	-	15.41	-	To water - light sheen
	10/31/01	-	14.55	-	To water - light sheen (15.85 to bottom)
CW-3	11/08/00	-	13.30	-	To water - no oil
	12/04/00	-	11.81	-	To water - very light sheen
	01/16/01	-	12.35	-	To water - light sheen
	02/15/01	-	12.10	-	To water - light sheen
	03/16/01	-	12.73	-	To water - light sheen
	04/18/01	-	12.35	-	To water - sheen
	05/15/01	-	8.80	-	To water - light sheen
	06/20/01	-	11.87	-	To water - light sheen
	07/24/01	-	12.81	-	To water - light sheen visible
	08/21/01	-	13.18	-	To water - light sheen visible
	09/28/01	-	13.38	-	To water - light sheen, some rust
	10/31/01	-	12.40	-	To water - light sheen (16.1 to bottom)
CW-4	11/08/00	-	12.51	-	To water - sheen visible
	12/04/00	-	11.20	-	To water - sheen
	01/16/01	-	11.56	-	To water - light sheen
	02/15/01	-	11.52	-	To water - light sheen
	03/16/01	-	11.68	-	To water - very light sheen
	04/18/01	-	11.50	-	To water - sheen
	05/15/01	-	8.24	-	To water - very light sheen
	06/20/01	-	10.93	-	To water - light sheen
	07/24/01	-	11.89	-	To water - rusty sheen present
	08/21/01	-	12.40	-	To water - rusty sheen present
	09/28/01	-	12.71	-	To water - rusty sheen
	10/31/01	-	10.83	-	To water - clean (15.60 to bottom)
CW-5	11/08/00	-	12.85	-	To water - oil not measurable - sheen
	12/04/00	-	11.91	-	To water - no measurable oil - sheen
	01/16/01	-	11.81	-	To water - light sheen
	02/15/01	-	11.41	-	To water - light sheen

Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
CW-5 (Continued)	03/16/01	-	11.83	-	To water - very light sheen
	04/18/01	-	11.18	-	To water - sheen
	05/15/01	-	8.50	-	To water - light sheen
	06/20/01	-	11.10	-	To water - very light sheen
	07/24/01	-	12.41	-	To water - light sheen
	08/21/01	-	12.83	-	To water
	09/28/01	-	13.39	-	To water - very light sheen
	10/31/01	-	11.78	-	To water - very light sheen (15.30 to bottom)
CW-6	11/08/00	-	18.21	-	To water - sheen
	12/04/00	-	17.35	-	To water - sheen
	01/16/01	-	17.33	-	To water - light sheen
	02/15/01	-	17.11	-	To water - light sheen
	03/16/01	-	17.26	-	To water - light sheen
	04/18/01	-	17.14	-	To water - sheen
	05/15/01	-	14.11	-	Visible thin layer of oil
	06/20/01	-	16.70	-	Visible thin layer of oil
	07/24/01	-	17.68	-	To water - visible thin layer of oil
	08/21/01	-	18.13	-	To water - visible thin layer of oil
	09/28/01	-	18.42	-	To water - thin layer of oil
	10/31/01	-	17.33	-	To water - thin layer of oil (19.70 to bottom)
EW-1	11/08/00	-	15.91	-	To water - sheen visible
	12/04/00	-	15.30	-	To water - light sheen
	01/16/01	-	15.39	-	To water - light sheen
	02/15/01	-	15.08	-	To water - light sheen
	03/16/01	-	15.45	-	To water
	04/18/01	-	15.45	-	To water - light sheen
	05/15/01	-	12.21	-	To water
	06/20/01	-	14.84	-	To water
	07/24/01	-	15.68	-	To water
	08/21/01	-	16.06	-	To water - light sheen
	09/28/01	-	16.34	-	To water - light sheen
	10/31/01	-	15.38	-	To water - light sheen
EW-2	11/08/00	-	15.25	-	To water - heavy sheen
	12/04/00	14.19	Can't determine	-	Can't determine oil depth - too thick
	01/16/01	14.60	Can't determine	-	To oil - very thick
	02/15/01	14.34	14.36	0.02	Oil present
	03/16/01	14.75	14.78	0.03	Oil present
	04/18/01	14.60	Can't determine	-	Couldn't clean probe
	05/15/01	11.53	11.54	0.01	Oil present - thin layer
	06/20/01	14.10	Can't determine	-	To oil
	07/24/01	14.95	15.00	0.05	To oil
	08/21/01	15.34	15.38	0.04	Oil present
	09/28/01	15.62	15.67	0.05	To oil
	10/31/01	14.62	14.65	0.03	To oil
EW-3	11/08/00	16.42	16.50	0.08	Oil present
	12/04/00	14.42	Can't determine	-	Can't determine oil depth - too thick
	01/16/01	14.80	Can't determine	-	Oil present - can't get thickness
	02/15/01	14.50	Can't determine	-	Oil present
	03/16/01	14.77	14.80	0.03	Oil present
	04/18/01	14.60	Can't determine	-	Couldn't clean probe
	05/15/01	11.38	11.42	0.04	Oil present
	06/20/01	14.13	14.17	0.04	Oil present

Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
EW-3 (Continued)	07/24/01	15.05	15.11	0.06	Oil present
	08/21/01	15.52	15.58	0.06	Oil present
	09/28/01	15.81	15.89	0.08	To oil
	10/31/01	14.60	14.64	0.04	To oil
EW-4	11/08/00	13.75	13.77	0.02	Oil present
	12/04/00	12.64	12.65	0.01	Oil present
	01/16/01	12.74	Can't determine	-	Thick oil present
	02/15/01	12.25	Can't determine	-	To oil
	03/16/01	12.42	Can't determine	-	To oil - very thick
	04/18/01	11.35	Can't determine	-	Couldn't clean probe
	05/15/01	9.01	9.02	0.01	To oil - thin layer
	06/20/01	11.58	11.59	0.005	Oil present
	07/24/01	12.90	12.93	0.03	Oil present
	08/21/01	13.62	13.64	0.02	Oil present
	09/28/01	14.00	14.02	0.02	To oil
	10/31/01	12.55	12.57	0.02	To oil (very thick)
HC-1	11/08/00	-	-	-	Could not find
	12/04/00	-	-	-	Could not find
	01/16/01	-	-	-	Could not find
	02/15/01	-	-	-	Could not find
	03/16/01	-	12.70	-	To water - no oil
	04/18/01	-	12.50	-	To water - clean
	05/15/01	-	9.72	-	To water - some red rust
	06/20/01	-	12.10	-	Water - light red rust
	07/24/01	-	12.91	-	To water - clean
	08/21/01	-	13.27	-	To water - clean
	09/28/01	-	13.45	-	To water - light red rust present
	10/31/01	-	12.63	-	Red rust present (17.85 to bottom)
HC-4	11/08/00	13.68	14.46	0.78	Oil present
	12/04/00	12.97	Can't determine	-	Can't determine oil depth - too thick
	01/16/01	12.81	Can't determine	-	Oil present
	02/15/01	12.51	Can't determine	-	Oil present
	03/16/01	11.91	Can't determine	-	To oil
	04/18/01	12.20	Can't determine	-	Couldn't find probe
	05/15/01	10.48	Can't determine	-	Oil present
	06/20/01	12.15	12.34	0.19	Oil present
	07/24/01	13.07	13.38	0.31	Oil present
	08/21/01	13.55	14.12	0.57	Oil present
	09/28/01	13.80	14.61	0.81	Oil present
	10/31/01	12.65	13.45	0.80	Oil present (18.13 to bottom)
HC-5	11/08/00	-	18.40	-	To water - no oil
	12/04/00	-	17.63	-	To water - no measurable oil - sheen
	01/16/01	-	17.55	-	To water - no oil
	02/15/01	-	17.28	-	To water - no oil
	03/16/01	-	17.24	-	To water
	04/18/01	-	16.98	-	To water - clean
	05/15/01	-	14.25	-	To water - clean
	06/20/01	-	16.80	-	To water - clean
	07/24/01	-	17.88	-	To water - clean
	08/21/01	-	18.40	-	To water - clean
	09/28/01	-	18.72	-	To water - clean
	10/31/01	-	17.46	-	To water (23.05 to bottom)

Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
MW-5 (Continued)	11/08/00	-	10.80	-	To water - no oil
	12/04/00	-	9.93	-	To water - no oil
	01/16/01	-	9.70	-	To water - no oil
	02/15/01	-	9.35	-	To water - no oil
	03/16/01	-	10.04	-	To water
	04/18/01	-	9.28	-	Clean
	05/15/01	-	6.51	-	Clean
	06/20/01	-	9.20	-	Clean
	07/24/01	-	10.40	-	Clean
	08/21/01	-	10.97	-	Clean water
	09/28/01	-	11.28	-	Clean water
	10/31/01	-	9.92	-	To water (12.83 to bottom)
MW-11	11/08/00	-	-	-	Not tested
	12/04/00	18.40	-	-	Oil too thick - do not test
	01/16/01	17.90	-	-	To oil (thick) - not measurable
	02/15/01	-	-	-	Can't find - deep snow
	03/16/01	-	-	-	Not tested
	04/18/01	15.75	-	-	Couldn't clean probe
	05/15/01	-	-	-	Not tested
	06/20/01	-	-	-	Not tested
	07/24/01	-	-	-	Not tested
	08/21/01	-	-	-	Not tested
	09/28/01	-	-	-	Not tested
	10/31/01	-	-	-	Not tested
TP-1, 2"	11/08/00	-	20.02	-	To water - no oil
	12/04/00	-	19.10	-	To water - sheen
	01/16/01	-	19.16	-	To water - no oil
	02/15/01	-	18.88	-	To water - no oil
	03/16/01	-	19.08	-	To water - light sheen
	04/18/01	-	18.85	-	To water - light sheen
	05/15/01	15.785	15.79	0.005	To thin layer of oil
	06/20/01	-	18.53	-	To water - light sheen
	07/24/01	-	19.46	-	To water - light sheen
	08/21/01	-	19.95	-	To water - light sheen
	09/28/01	-	20.22	-	To water - sheen present
	10/31/01	-	19.08	-	Trace of oil (22.41 to bottom)
TP-1, 4"	11/08/00	-	19.75	-	To water - sheen
	12/04/00	18.83	18.84	0.01	Thin layer of oil
	01/16/01	-	18.92	-	To water - no oil
	02/15/01	-	18.63	-	To water - light sheen
	03/16/01	-	18.82	-	To water - heavy sheen
	04/18/01	-	18.60	-	To water - heavy sheen
	05/15/01	-	15.63	-	Heavy sheen
	06/20/01	-	18.28	-	To water - light sheen
	07/24/01	-	19.20	-	To water - heavy sheen
	08/21/01	-	19.69	-	To water - heavy sheen
	09/28/01	-	19.96	-	To water - heavy sheen
	10/31/01	-	18.85	-	Trace of oil - micro worms (16.98 to bottom)
TP-2	11/08/00	-	14.95	-	To water - no oil
	12/04/00	-	15.37	-	To bottom - no oil - dry well
	01/16/01	-	15.45	-	Dry well

Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
TP-2 (Continued)	02/15/01	-	15.35	-	Dry well
	03/16/01	-	14.61	-	to water
	04/18/01	15.21	Can't determine	-	Couldn't clean probe
	05/15/01	-	12.19	-	To water
	06/20/01	14.85	14.86	0.01	Oil present
	07/24/01	-	15.40	-	Well bottom - sludge no oil
	08/21/01	-	15.40	-	Well bottom - dry trace of oil
	09/28/01	-	15.90	-	well bottom - dry light trace of oil
	10/31/01	-	14.50	-	To water (15.40 to bottom)
TP-3	11/08/00	-	16.45	-	Dry well
	12/04/00	-	16.05	-	Dry well
	01/16/01	-	16.10	-	Dry well
	02/15/01	-	16.12	-	Dry well
	03/16/01	-	15.01	-	To water - light sheen
	04/18/01	-	15.80	-	To water - light sheen
	05/15/01	-	13.28	-	To water - very light sheen
	06/20/01	-	15.58	-	To water - oil globs on probe
	07/24/01	-	16.10	-	Well bottom - dry well/clean
	08/21/01	-	16.10	-	Well bottom - dry trace of oil
	09/28/01	-	16.10	-	Well bottom - dry trace of oil
	10/31/01	-	15.20	-	Trace of oil - micro worms present (16.10 to bottom)
TP-5	11/08/00	-	17.92	-	To water - no oil
	12/04/00	-	16.27	-	To water - no measurable oil - sheen
	01/16/01	-	16.11	-	To water - light sheen
	02/15/01	-	15.76	-	To water - light sheen
	03/16/01	-	15.12	-	To water
	04/18/01	-	15.55	-	Clean
	05/15/01	-	12.73	-	Clean
	06/20/01	-	15.21	-	Clean
	07/24/01	-	16.35	-	Clean
	08/21/01	-	16.86	-	To water - micro worms present
	09/28/01	-	16.98	-	To water - trace of oil
	10/31/01	-	15.63	-	To water (18.10 to bottom)
TP-6	11/08/00	-	15.00	-	Dry well
	12/04/00	-	14.76	-	To water - no oil
	01/16/01	-	14.62	-	Dry well
	02/15/01	-	14.42	-	To water - no oil
	03/16/01	-	14.13	-	To water
	04/18/01	-	14.14	-	Clean
	05/15/01	-	11.62	-	Clean
	06/20/01	-	13.95	-	Clean
	07/24/01	-	14.79	-	Specks of oil
	08/21/01	-	14.95	-	Well bottom - dry trace of oil
	09/28/01	-	14.98	-	Well bottom - oily mud
	10/31/01	-	14.38	-	To water (14.98 to bottom)
TP-7	11/08/00	-	17.30	-	Dry well
	12/04/00	-	17.05	-	Bottom - dry well
	01/16/01	-	17.00	-	Dry well
	02/15/01	-	17.10	-	Dry well
	03/16/01	-	14.73	-	To water - red rust in water
	04/18/01	-	15.38	-	Clean
	05/15/01	-	14.36	-	To water - red rust color

Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
	06/20/01	-	16.96	-	Dry well - wet red rust
	07/24/01	-	16.98	-	Well bottom - dry
	08/21/01	-	16.98	-	Well bottom - dry
	09/28/01	-	16.98	-	Well bottom - dry
	10/31/01	-	16.81	-	To water - micro worms (16.98 to bottom)
TP-8	11/08/00	-	17.40	-	Dry well
	12/04/00	-	16.76	-	Bottom - dry well
	01/16/01	-	16.81	-	Dry well
	02/15/01	-	16.80	-	Dry well
	03/16/01	-	16.42	-	To water - oil skim present
	04/18/01	-	16.45	-	To water - skim of oil
	05/15/01	-	14.00	-	To water - skim of oil
	06/20/01	-	16.39	-	To water - skim of oil
	07/24/01	-	16.82	-	Well bottom - dry
	08/21/01	-	16.82	-	Well bottom - dry
	09/28/01	-	16.82	-	Well bottom - dry
	10/31/01	-	16.82	-	Dry - clean
TP-9	11/08/00	-	18.41	-	Water - no oil
	12/04/00	-	17.80	-	To water - no oil
	01/16/01	-	17.67	-	To water - no oil
	02/15/01	-	17.38	-	To water - no oil
	03/16/01	17.35	17.42	0.04	Oil present - very thin oil
	04/18/01	-	17.34	-	Oil present - thin oil
	05/15/01	14.58	14.585	0.005	To thin layer of oil - micro worms present
	06/20/01	17.05	17.055	0.005	Thin layer of oil
	07/24/01	17.95	17.98	0.03	Oil present
	08/21/01	18.35	18.39	0.04	Oil present
	09/28/01	18.61	18.64	0.03	Oil present - micro worms present
	10/31/01	17.66	17.67	0.01	Oil present (19.25 to bottom)
TP-10	11/08/00	-	18.00	-	Dry well
	12/04/00	-	17.48	-	To water - no oil
	01/16/01	-	17.24	-	To water - no oil
	02/15/01	-	16.96	-	To water - no oil
	03/16/01	-	17.03	-	To water
	04/18/01	-	17.10	-	Clean
	05/15/01	-	14.20	-	To water
	06/20/01	-	16.64	-	To water
	07/24/01	-	17.45	-	To water - micro white worms
	08/21/01	-	17.50	-	Well bottom - light sludge - oily
	09/28/01	-	17.50	-	Well bottom - dry
	10/31/01	-	16.84	-	To water - micro worms (17.50 to bottom)
TP-11	11/08/00	-	18.00	-	Dry well
	12/04/00	-	17.46	-	To water - no oil
	01/16/01	-	17.23	-	To water - no oil
	02/15/01	-	16.97	-	To water - no oil
	03/16/01	-	17.11	-	To water - very light sheen
	04/18/01	-	17.10	-	To water - very light sheen
	05/15/01	-	14.18	-	To water - light sheen
	06/20/01	-	16.70	-	To water
	07/24/01	-	17.43	-	To water - micro white worms present - no oil
	08/21/01	-	17.58	-	To water - micro white worms present
	09/28/01	-	17.80	-	To water - light sheen present

Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
	10/31/01	-	17.70	-	To water - micro worms (17.90 to bottom)
TP-12 (Continued)	11/08/00	-	14.76	-	To water - no oil
	12/04/00	-	15.01	-	To water - no measureable oil - sheen
	01/16/01	-	14.83	-	To water - no oil
	02/15/01	-	14.72	-	To water - no oil
	03/16/01	-	13.82	-	To water
	04/18/01	-	14.70	-	To water - light sheen
	05/15/01	-	11.60	-	Light sheen
	06/20/01	-	14.26	-	Very light sheen
	07/24/01	-	15.25	-	Well bottom - sandy sludge with oil
	08/21/01	-	15.25	-	Well bottom - sludge with oil
	09/28/01	-	15.28	-	Well bottom - oil sludge
	10/31/01	-	14.53	-	To water - trace of oil (15.30 to bottom)

Potlatch

Potlatch Corporation
Resource Management Division

St. Joe Woodlands
P.O. Box 386
St. Maries, ID 83861-0386
Telephone (208) 245-4146
Fax (208) 245-6421

September 24, 2004

RECEIVED

State of Idaho
Division of Environmental Quality
2110 Ironwood Parkway
Coeur d' Alene, ID 83814-2648

SEP 24 2004

DEQ-Coeur d'Alene
Regional Office

Attention: Mark Kalbaugh

RE: Avery Landing Monitoring - 2004

Dear Mark:

The yearly Monitoring of existing wells on the Avery Landing was completed on September 23, 2004. This monitoring is in accordance to our agreement dated, January 18, 2002. A copy of the well monitoring log is attached for your review and files. The free product (Oil) thickness in the six collection wells is nearly non-existent with red rust present on top of the water.

The St. Joe River adjacent to the Remediation Area was inspected for any visible presence of free product or oil sheen on the water and none was observed. The vegetation appears to be progressing adequately at this time.

The Avery Landing Remediation System has been installed for nearly four years and has effectively stopped the free product (oil) from entering the St. Joe River.

Mark, we appreciate you taking the time to participate in the monitoring this year and if you have any questions, feel free to call me at my St. Maries office.

Sincerely,



Norm Linton
Area Manager

NL:sh

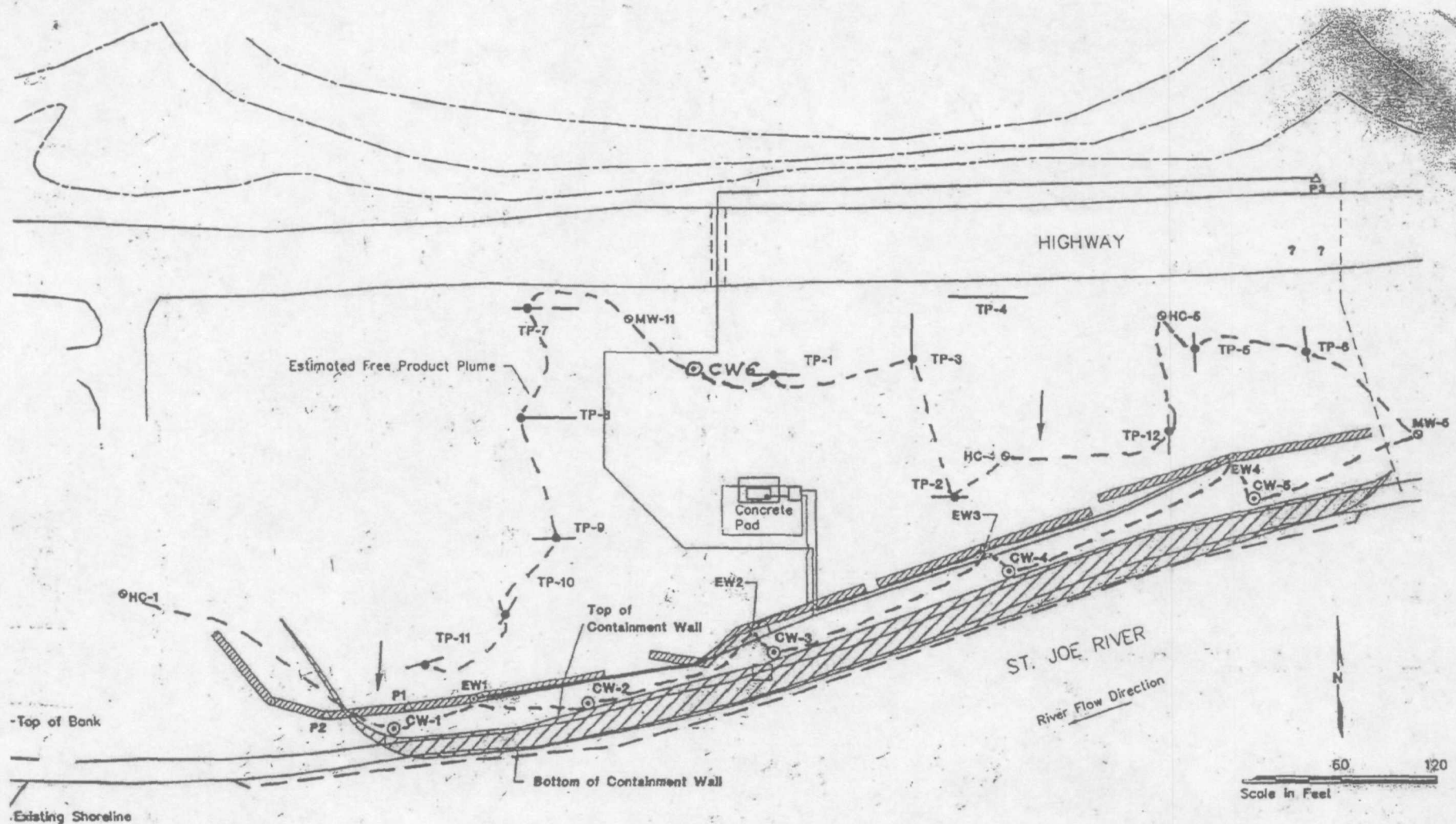
cc: Greg Weigal - U.S., EPA, Boise
Chip Corsi - IDFG, CDA
Greg Rapp

Avery Well Monitoring

Date: 9/23/2004

Measurements By: Norm Linton, Jim Green, Mark Karbaugh DE

Well	Depth to Oil	Depth to Water	Oil Thickness	Comments
HC-1	—	12.90	—	Clean Water, Red Rust Present
CW-1	—	14.06	—	To water light sheen Oil, Red Rust
EW-1	—	15.80	—	To water, white Worms
CW-2	—	14.83	—	To water, Red Rust Present
EW-2	15.04	15.07	0.03	Black Oil
CW-3	—	12.80	—	To Water, Red Rust present
EW-3	15.12	16.14	0.02	Black Oil
CW-4	—	11.67	—	To Water, slight Red Rust
EW-4	12.75	12.76	0.01	Black Oil
CW-5	—	12.24	—	To Water - clean
MW-5	—	10.52	—	Clean Water
TP-6	—	14.64	—	To water light sheen
TP-5	—	16.22	—	To water Red Rust present
HC-5	—	17.76	—	Clean Water
TP-12	—	14.76	—	To clean water
HC-4	13.50	13.65	0.15	Black Oil
TP-2	15.40	15.41	0.01	Black Oil
TP-3	—	15.85	—	To water micro white Worms
TP-1,4"	—	19.18	—	To water micro white Worms
TP-1,2"	—	19.42	—	To water micro white Worms
CW-6	—	17.60	—	To water Red Rust white Worms
MW-11	—	—	—	not tested
TP-7	—	17.00	—	Dry Well
TP-8	—	16.52	—	To water micro white Worms
TP-9	—	17.99	—	To water light sheen, white Worms
TP-10	—	17.50	—	Dry Well
TP-11	—	17.46	—	To water, oily sludge at the bottom



Exploration Location and Number

- MW-4 Monitoring Well
- EW-1 Extraction Well
- △ P1 Piezometer

- ← Approximate Groundwater Flow Direction
- ▨ Existing Extraction Trench
- - - Free Product Plume Area
- - - Retainer Block/Sand Bag Cofferdam

- TP-1 Test Pit Location and Number
- TP-1 Test Pit Monitoring Well Location and Number
- ◎ CW-1 Collection Well Location and Number
- ▨ Proposed Containment Wall - 7.50'

HARTCROWSER
J-2298-07 7100
Figure 4

Potlatch

Potlatch Corporation
Resource Management Division

St. Joe Woodlands
P.O. Box 386
St. Maries, ID 83861-0386
Telephone (208) 245-4146
Fax (208) 245-6421

December 4, 2003

State of Idaho
Division of Environmental Quality
2110 Ironwood Parkway
Coeur d' Alene, ID 83814-2648

Attention: Kreg Beck

RE: Avery Landing Monitoring – 2003

Dear Kreg:

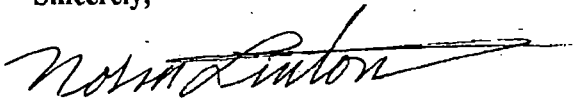
The yearly Monitoring of existing wells on the Avery Landing was completed on September 26, 2003. This monitoring is in accordance to our agreement dated, January 18, 2002. A copy of the well monitoring log is attached for your review and files. The free product (Oil) thickness in the six collection wells is a light sheen with some red rust present on top of the water.

The St. Joe River adjacent to the Remediation Area was inspected for any visible presence of free product or oil sheen on the water and none was observed. The vegetation appears to be fairly limited at this time and the replanting of some cottonwood is planned for the spring of 2004.

The Avery Landing Remediation System has been installed for nearly three years and has effectively stopped the free product (oil) from entering the St. Joe River.

Kreg, if you have any questions, feel free to call me at my St. Maries office.

Sincerely,



Norm Linton
Area Manager

NL:sh

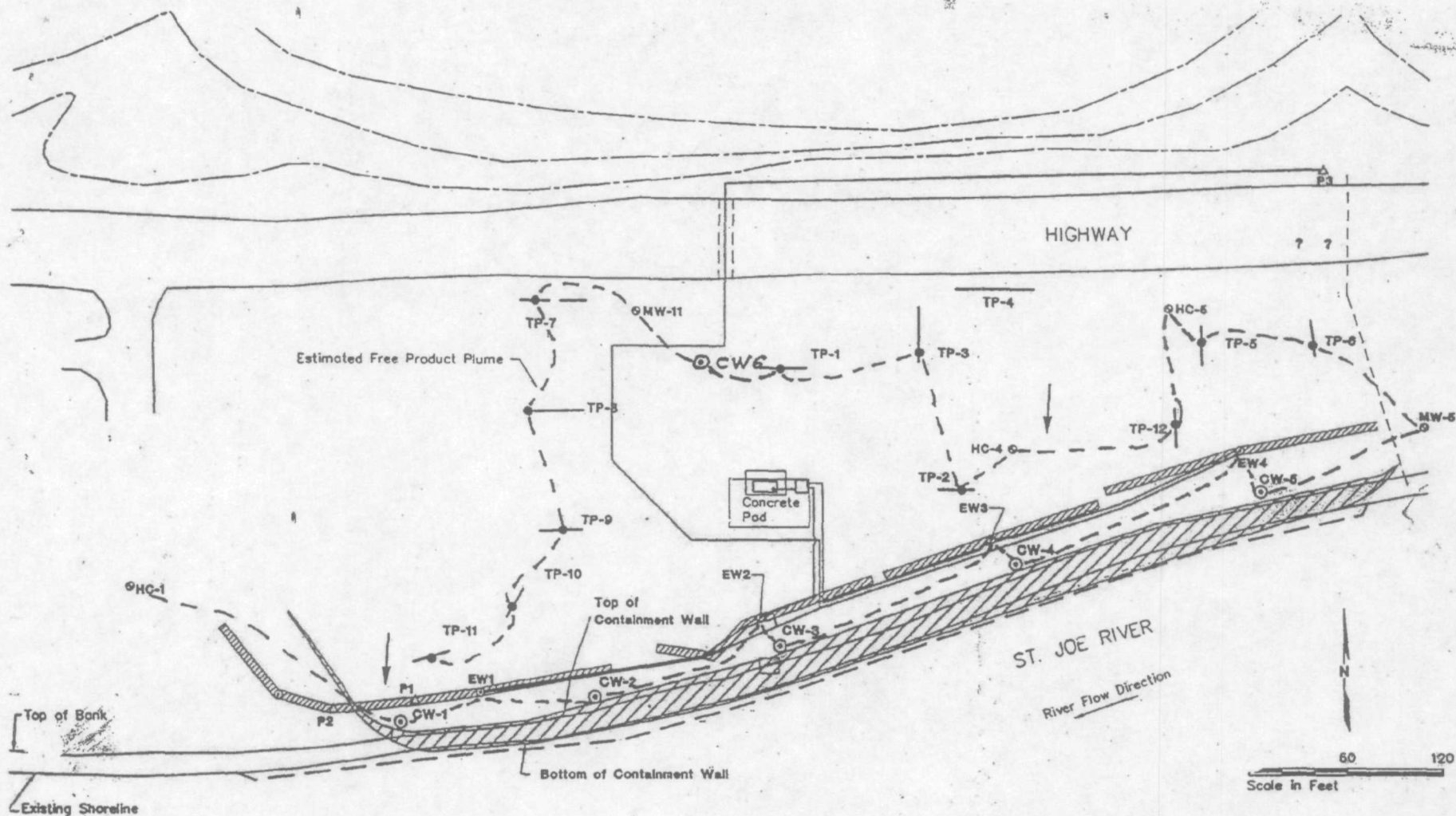
cc: Greg Weigal – U.S., EPA, Boise
Chip Corsi – IDFG, CDA
Greg Rapp

Avery Well Monitoring

Date: 9/26/03

Measurements By: Norm Linton, Don Green

Well	Depth to Oil	Depth to Water	Oil Thickness	Comments
HC-1	—	13.41	—	To water Trace Red Rust
CW-1	—	14.59	—	To water, light Sheen of Oil
EW-1	—	16.32	—	To water, light sheen, white water
CW-2	—	15.33	—	To water, Red Rust, Light Sheen
EW-2	15.59	15.62	0.03	Black Oil
CW-3	—	13.29	—	To water, Red Rust, Light Sheen
EW-3	15.85	15.91	0.06	Black Oil
CW-4	—	12.63	—	To water, light Sheen
EW-4	13.95	13.97	0.02	Black Oil
CW-5	—	13.35	—	To water light sheen
MW-5	—	11.15	—	Clean Water
TP-6	—	15.00	—	Dry Well
TP-5	—	16.95	—	Rust in Water
HC-5	—	18.55	—	Clean Water
TP-12	—	14.92	—	To water micro white water
HC-4	14.40	14.45	0.05	Black Oil
TP-2	—	15.41	—	Well bottom
TP-3	—	16.10	—	Well bottom
TP-1,4"	—	19.91	—	To Water micro white water
TP-1,2"	—	20.13	—	To water Sheen of oil present
CW-6	—	18.31	—	To water light sheen
MW-11	—	Not Tested	—	
TP-7	—	17.00	—	Dry Well
TP-8	—	16.77	—	To Water micro white water
TP-9	—	18.50	—	To Water white Micro water no oil
TP-10	—	17.50	—	Dry Well
TP-11	—	17.71	—	To water - Trace of oil - micro white water



Exploration Location and Number

- MW-4 Monitoring Well
- EW-1 Extraction Well
- △ P1 Piezometer

- ← Approximate Groundwater Flow Direction
- ▨ Existing Extraction Trench
- - - Free Product Plume Area
- - - Retainer Block/Sand Bag Cofferdam

- TP-1 Test Pit Location and Number
- TP-1 Test Pit Monitoring Well Location and Number
- ◎ CW-1 Collection Well Location and Number
- ▨ Proposed Containment Wall - 750'

HARTCROWSER
J-2298-07 7/00
Figure 4

Potlatch

Potlatch Corporation
Resource Management Division

St. Joe Woodlands
P.O. Box 386
St. Maries, ID 83861-0386
Telephone (208) 245-4146
Fax (208) 245-6421

October 30, 2002

State of Idaho
Division of Environmental Quality
2110 Ironwood Parkway
Coeur d' Alene, Idaho 83814-2648

Attn: Kreg Beck

Re: Avery Landing Monitoring - 2002

Dear Kreg:

The Annual Monitoring of existing wells on the Avery Landing was completed on October 4, 2002. This monitoring is in accordance our agreement dated, January 18, 2002. A copy of the well monitoring log is attached for your review and files. The free product (Oil) thickness in the six collection wells is a light sheen on top of the water. The removal of the sheen was not attempted with absorbent pads due to the very small amount of product visible in the wells.

The St. Joe River adjacent to the Remediation Area was inspected for any visible presence of product or oil sheen on the water and none was observed. The vegetation appears to be satisfactory at this time.

The Avery Landing Remediation System has been installed for nearly two years and has effectively stopped the free product from entering the St. Joe River.

Kreg, if you have any Questions feel free to call me at my St. Maries office.

Sincerely,



Norm Linton
Area Manager

CC: Greg Weigal - U.S., EPA, Boise
Chip Corsi - IDFG, CDA
Mike McAllister

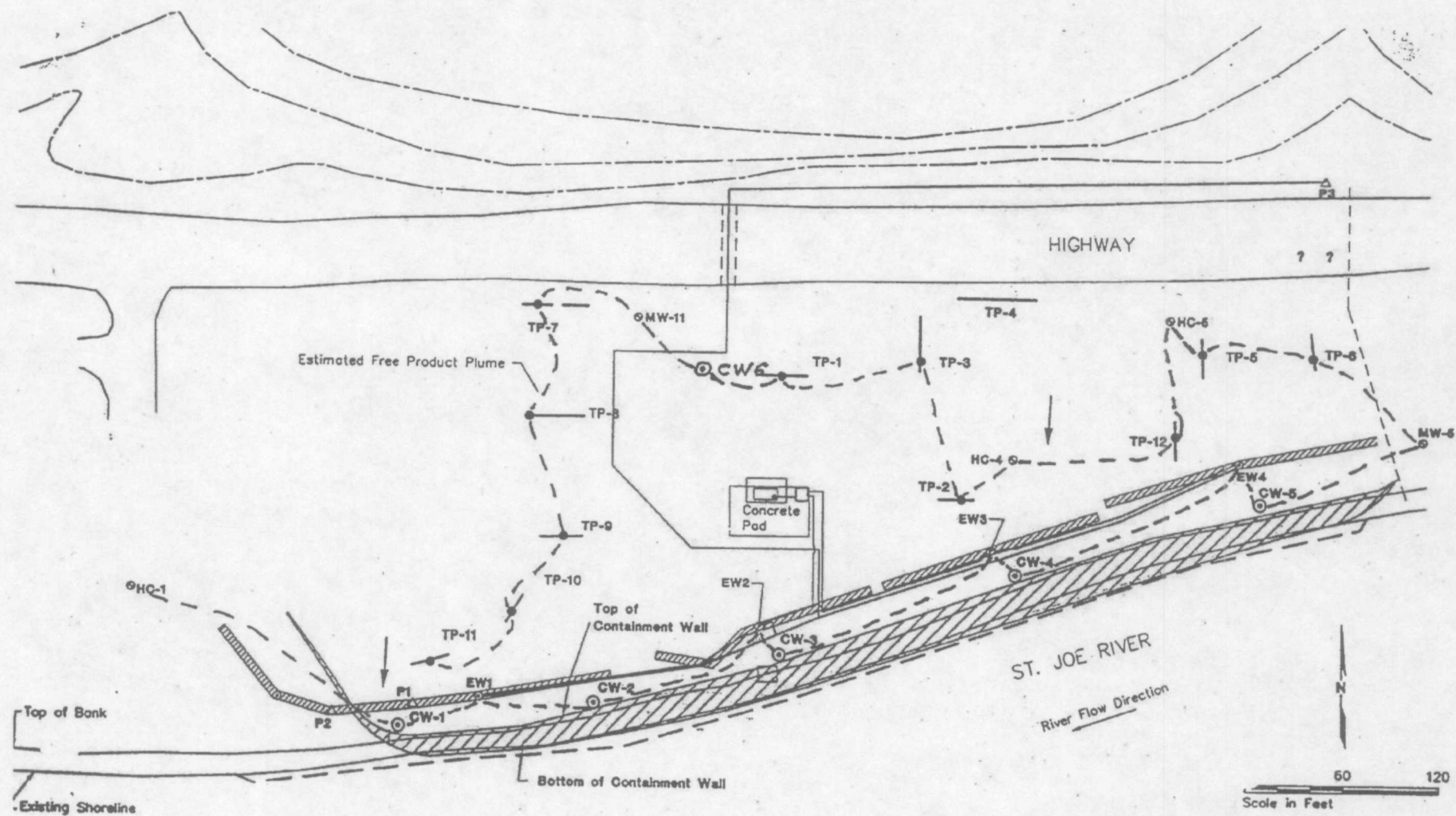
John Emery
Greg Rapp

Avery Well Monitoring

Date: 10/4/2002

Measurements By: Norm Linton, Don Green

Well	Depth to Oil	Depth to Water	Oil Thickness	Comments
HC-1	—	13.21	—	To water Trace Red Rust
CW-1	—	14.35	—	To water, light sheen
EW-1	—	15.97	—	To water, light sheen
CW-2	—	18.11	—	To water, Trace Red Rust, light
EW-2	15.25	15.28	0.03	To Oil
CW-3	—	13.09	—	To water, light sheen, Red Rust
EW-3	15.43	15.50	0.07	To Oil
CW-4	—	12.31	—	To water light sheen
EW-4	13.29	13.31	0.02	To Oil
CW-5	—	12.76	—	To water, light sheen
MW-5	—	10.90	—	Clean Water
TP-6	—	15.00	—	Well Bottom - Dry
TP-5 2"	—	16.78	—	Rust in water
HC-5	—	18.18	—	Clean Water
TP-12	—	15.18	—	To water Trace of Oil
HC-4	13.51	13.60	0.09	Black Oil
TP-2	—	15.40	—	Well Bottom - oil sludge 1/4" thick
TP-3	—	16.10	—	Well Bottom Dry Trace of Oil
TP-1,4"	—	19.57	—	Light sheen - worms present
TP-1,2"	—	19.81	—	To water Sheen present
CW-6	—	18.03	—	To water light sheen white worms present
MW-11	—	—	—	Not Tested
TP-7	—	17.00	—	Well Bottom Dry
TP-8	—	16.82	—	Well Bottom Dry
TP-9	—	18.30	—	To water - Trace of oil - white worms
TP-10	—	17.50	—	Well Bottom Dry
TP-11	—	17.52	—	To water, Trace of oil - white worms



Exploration Location and Number

- MW-1 Monitoring Well
- EW-1 Extraction Well
- △ P-1 Piezometer

- ← Approximate Groundwater Flow Direction
- ▨ Existing Extraction Trench
- - - Free Product Plume Area
- - - Retainer Block/Sand Bag Cofferdam

- TP-1 Test Pit Location and Number
- TP-1 Test Pit Monitoring Well Location and Number
- ◎ CW-1 Collection Well Location and Number
- ▨ Proposed Containment Wall - 750'

HARTCROWNSER
J-2298-07 7/00
Figure 4

Avery Well Monitoring

Date: 2/15/01

Measurements By: North Lintab, Don Green

Well	Depth to Oil	Depth to Water	Oil Thickness	Comments
HC-1				can't find
CW-1		13.46		To water light sheen
EW-1		15.08		To water light sheen
CW-2		14.30		To water light sheen
EW-2	14.34	14.36	.02	oil present
CW-3		12.10		To water light sheen
EW-3	14.50	can't determine		Oil Present
CW-4		11.52		To water light sheen
EW-4	12.25	can't determine		To oil
CW-5		11.41		To water light sheen
MW-5		9.35		To water no oil
TP-6		14.42		To water no oil
TP-5		15.76		To water light sheen
HC-5		17.28		To water no oil
TP-12		14.72		To water no oil
HC-4	12.51	can't determine		Oil Present
TP-2		15.35		Dry well
TP-3		16.12		Dry well
TP-1,4"		18.63		To water light sheen
TP-1,2"		18.88		To water no oil
CW-6		17.11		To water light sheen
MW-11		—	—	can't find deep snow
TP-7		17.10		Dry well
TP-8		16.80		Dry well
TP-9		17.35		To water - no oil
TP-10		16.56		To water - no oil
TP-11		16.87		To water - no oil

Avery Well Monitoring

Date: 1/16/2004

Measurements By: N. Linton & Dan Green

Well	Depth to Oil	Depth to Water	Oil Thickness	Comments
HC-1	—	—	—	can't find
CW-1	—	13.82	—	Depth to water light sheen
EW-1	—	15.39	—	To water light sheen
CW-2	—	14.63	—	To water light sheen
EW-2	14.60	can't determine	?	To oil - very thick
CW-3	—	12.35	—	To water light sheen
EW-3	14.80	can't determine	?	oil present can't get thicker
CW-4	—	11.56	—	To water light sheen
EW-4	12.74	can't determine	?	thick oil present
CW-5	—	11.81	—	To water light sheen
MW-5	—	9.70	—	To water no oil
TP-6	—	14.62	—	Dry well
TP-5	—	16.11	—	To water - light sheen
HC-5	—	17.55	—	To water no oil
TP-12	—	14.83	—	To water no oil
HC-4	12.81	can't determine	?	oil present
TP-2	—	15.45	—	Dry well
TP-3	—	16.10	—	Dry well
TP-1,4"	—	18.92	—	To water - no oil
TP-1,2"	—	19.16	—	To water - no oil
CW-6	—	17.33	—	To water - light sheen
MW-11	17.90	?	?	To oil (thick) ^{not} measurable
TP-7	—	17.00	—	Dry well
TP-8	—	16.81	—	Dry well
TP-9	—	17.67	—	To water - no oil
TP-10	—	17.24	—	To water - no oil
TP-11	—	17.23	—	To water - no oil

XC: Xreg Beck DEQ, CDA
 orig: Norm

Avery Well Monitoring

Date: 12-14-00

Measurements By: Norm Linton, Donnell Huling, Don Green

Well	Depth to Oil	Depth to Water	Oil Thickness	Comments
HC-1	—	—	—	Can't Find
CW-1	—	13.92	—	To Water - Sheen
EW-1	—	15.3	—	To Water - Light Sheen
CW-2	—	14.74	—	To Water - Sheen
EW-2	14.19	Can't Determine	—	Can't Determine oil depth - too thick
CW-3	—	11.81	—	To Water - Very Light Sheen
EW-3	14.42	Can't Determine	—	Can't determine oil depth - too thick
CW-4	—	11.2	—	To Water; Sheen
EW-4	12.64	12.65	0.01	Oil present
CW-5	—	11.91	—	To Water; No measurable oil - sheen
MW-5	—	9.93	—	To Water, No oil
TP-6	—	14.76	—	To Water, No oil
TP-5	—	16.29	—	To Water; No measurable oil - sheen
HC-5	—	17.63	—	To Water; No measurable oil - sheen
TP-12	—	15.01	—	To Water; No measurable oil - sheen
HC-4	12.93	Can't determine	—	Can't determine oil depth - too thick
TP-2	—	15.37	—	To Bottom; No oil - Dry Well
TP-3	—	16.05	—	Dry Well - Bottom
TP-1,4"	18.83	18.84	0.01	To Water - Sheen
TP-1,2"	—	19.1	—	To Water - Sheen
CW-6	—	17.35	—	To Water - Sheen
MW-11	18.4	—	—	Oil too thick - DO NOT TEST!!!
TP-7	—	17.05	—	Bottom - Dry Well
TP-8	—	16.76	—	Bottom - Dry Well
TP-9	—	17.8	—	To Water - No oil
TP-10	—	17.48	—	To Water - Dry well - No oil
TP-11	—	17.46	—	To Water - Dry well - No oil

xc: Kreg Beck, DEQ, cda
orig: Norm

Avery Well Monitoring

Date: <u>Nov. 8, 2000</u>				
Measurements By: <u>Terry Montoya</u> , <u>Danna Huling</u> , <u>Dan Green</u> <u>Kreg Beck, DEQ</u> , <u>Norm Hinton</u>				
Well	Depth to Oil	Depth to Water	Oil Thickness	Comments
HC-1	—	—	—	could not find
CW-1	—	14.51	—	To water - no oil
EW-1	—	15.91	—	To water - sheen visible
CW-2	—	15.31	—	To water - oil not measurable - sheen
EW-2	—	15.25	—	To water - Heavy sheen.
CW-3	—	13.30	—	To water - no oil
EW-3	16.42	16.50	0.08	oil present
CW-4	—	12.51	—	To water - sheen visible
EW-4	13.75	13.77	0.02	oil present
CW-5	—	12.83	—	To water - oil not measurable - sheen
MW-5	—	10.80	—	To water - no oil
TP-6	—	15.00	—	Dry well
TP-5	—	17.92	—	To water - no oil
HC-5	—	18.40	—	To water - no oil
TP-12	—	14.76	—	To water - no oil
HC-4	13.68	14.46	0.78'	oil present
TP-2	—	14.35	—	To water - no oil
TP-3	—	16.45	—	Dry well
TP-1,4"	—	19.75	—	To water - sheen
TP-1,2"	—	20.02	—	To water - no oil
CW-6	—	18.21	—	To water - sheen
MW-11	—	—	—	did not test
TP-7	—	17.30	—	Dry well
TP-8	—	17.40	—	Dry well
TP-9	—	18.41	—	water - no oil
TP-10	—	18.0	—	Dry well
TP-11	—	18.0	—	Dry well

Avery Well Monitoring

Date: August 29, 2006

Measurements By: Greg Rapp, Norm Linton

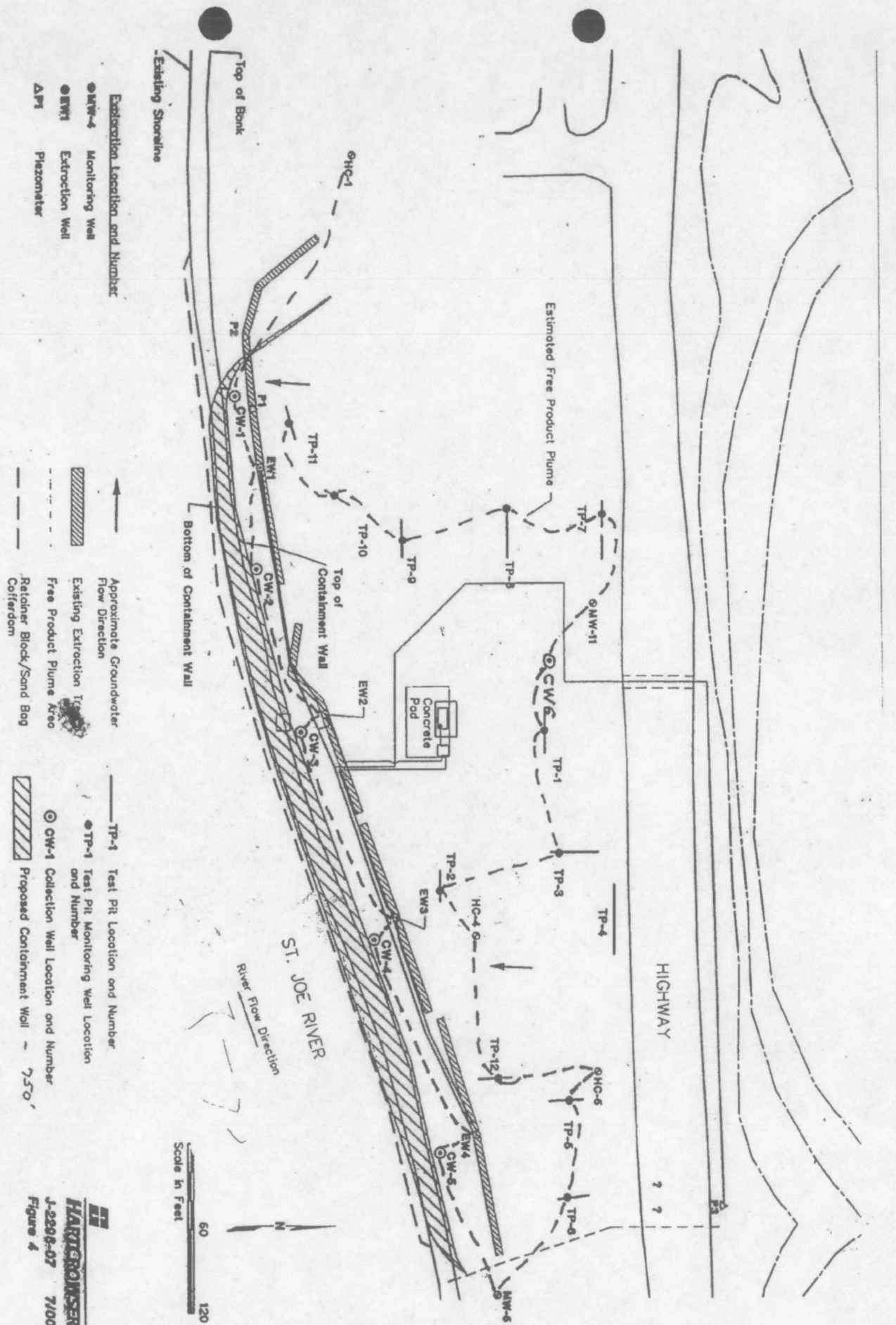
Well	Depth to Oil	Depth to Water	Oil Thickness	Comments
HC-1		13.21		To Water, some Red Rust
CW-1		14.39		To Water, Red Rust & light sheen
EW-1		16.23		To Water, White Worms
CW-2		15.13		To Water, Red Rust & light sheen
EW-2	15.34	15.35	.01	Black Oil
CW-3		13.4		To Water, Very light sheen
EW-3	13.52	?	?	Very thick black oil, ^{could not} determine thickness
CW-4		12.34		To Water, light sheen
EW-4	13.49	13.48	.04	Black Oil
CW-5		12.84		To Water, white & black worms ^{into stream}
MW-5		11.12		To Water - clean
TP-6		14.99		Dry Well
TP-5		16.60		To Water, Angerly Dry
HC-5		18.19		To Water - clean
TP-12		14.80		To Water, Red Rust present
HC-4	13.43	14.66	.23	Black Oil
TP-2	15.81	15.83	.02	Black Oil / White Worms
TP-3	15.23	15.24	.01	Black Oil
TP-1,4"		19.59		To Water / white Worms & ^{black} bugs
TP-1,2"		19.82		To Water, Red Rust & trace oil
CW-6		17.85		To Water, Red Rust present
MW-11	-	-	-	Not Tested
TP-7		17.00		Dry Well, some Red Rust
TP-8		16.58		To Water, white Worms present
TP-9		18.30		To Water, white Worms & ^{black} worms
TP-10		17.50		Dry well
TP-11		17.50		To Water / white Worms

Notes: Oil seepage observed along the River bank near CW 3 and the Wood Plank Platform in the River. Floating Oil booms were installed to contain the seepage.

On August 9, 2006 Norm Linton and Don Pence inspected the Avery Landing for oil seepage and no oil seepage was visible at that time.

Norm Linton

Greg Rapp 8/29/06



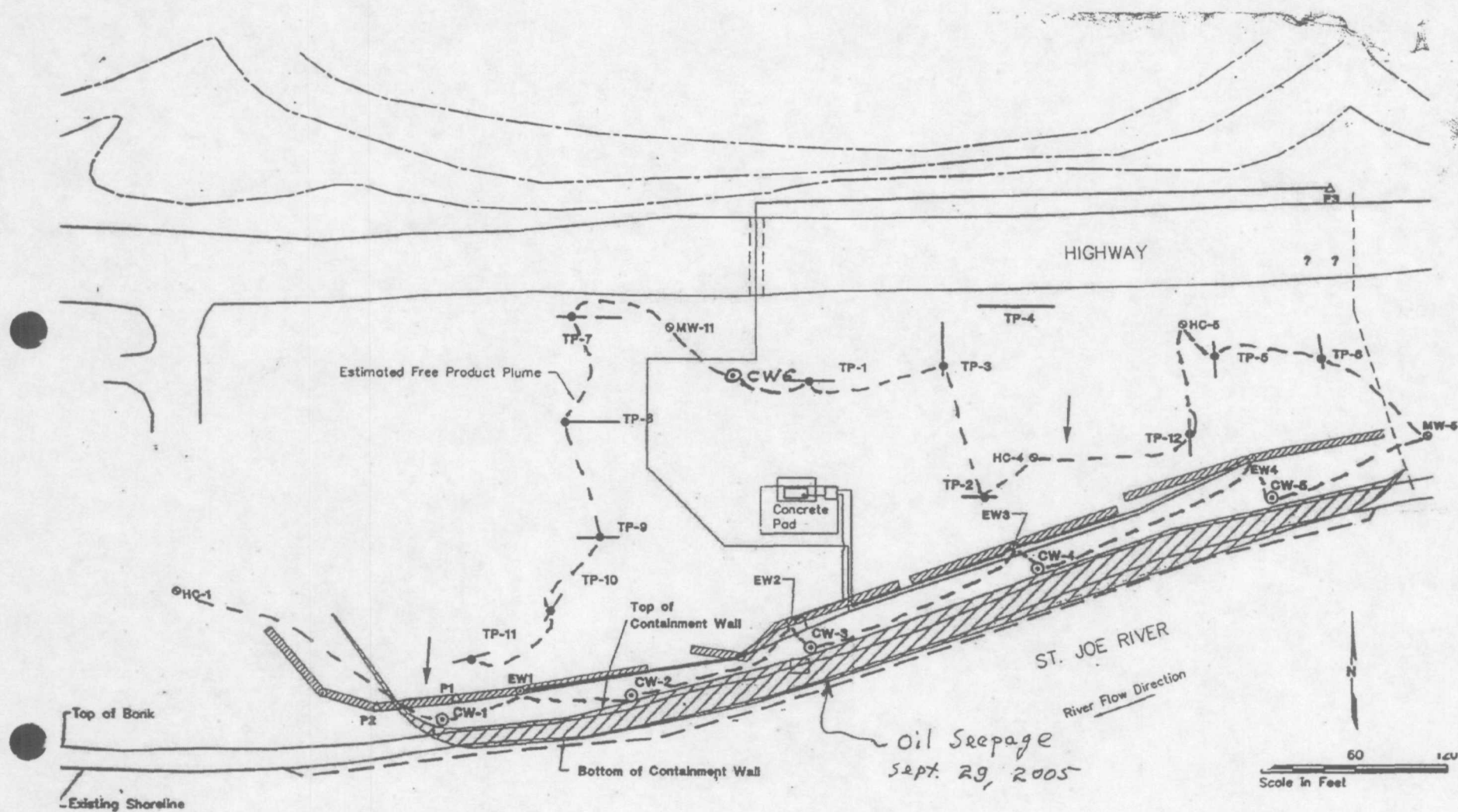
HARGRENSER
J-2286-07 7100
Figure 4

Avery Well Monitoring

Date: <u>9/29/05</u>				
Measurements By: <u>Norm Hinton</u> , <u>Greg Rapp</u>				
Well	Depth to Oil	Depth to Water	Oil Thickness	Comments
HC-1	—	13.40	—	To water / Red Rust
CW-1	—	14.68	—	To water Red Rust / Lt sheen
EW-1	—	16.47	—	To water worms
CW-2	—	15.35	—	To water / light sheen
EW-2	15.58	15.59	.01	Black Oil
CW-3	—	13.31	—	To water / light sheen / Rust
EW-3	13.83	13.85	.02	Black Oil
CW-4	—	13.87	—	To water / light sheen / Rust
EW-4	14.00	14.06	.01	Black Oil
CW-5	—	13.49	—	To water
MW-5	—	11.23	—	To water
TP-6	—	14.96	—	Dry Well
TP-5	—	16.92	—	Water / sludge at bottom
HC-5	—	23.06	—	Dry Well - Bottom
TP-12	—	14.94	—	To water / white worm worms
HC-4	14.70	14.74	.04	Black Oil
TP-2	15.19	15.20	.01	Black Oil
TP-3	—	16.16	—	Dry Well some sludge / worms
TP-1,4"	—	19.89	—	To water white worms
TP-1,2"	—	20.14	—	To water Red Rust Present
CW-6	—	18.33	—	To water Red Rust / White worms
MW-11	—	—	—	Not Tested
TP-7	—	17.00	—	Dry
TP-8	—	16.66	—	To water / white worms
TP-9	—	17.58	—	To water white worms
TP-10	—	17.50	—	Dry well
TP-11	—	17.63	—	To water / sludge at bottom

Note: Oil sheen & oil seepage along river bank near CW 3 and the wood plank platform in the River. River level very low and the water table may have dropped below the Barrier Liner which has allowed the oil to seep under the liner and into the River.

Norm Hinton Sept 29, 2005



Exploration Location and Number

- MW-4 Monitoring Well
- EW-1 Extraction Well
- △ P1 Piezometer

- ← Approximate Groundwater Flow Direction
- ▨ Existing Extraction Trench
- - - Free Product Plume Area
- - - Retainer Block/Sand Bag Cofferdam

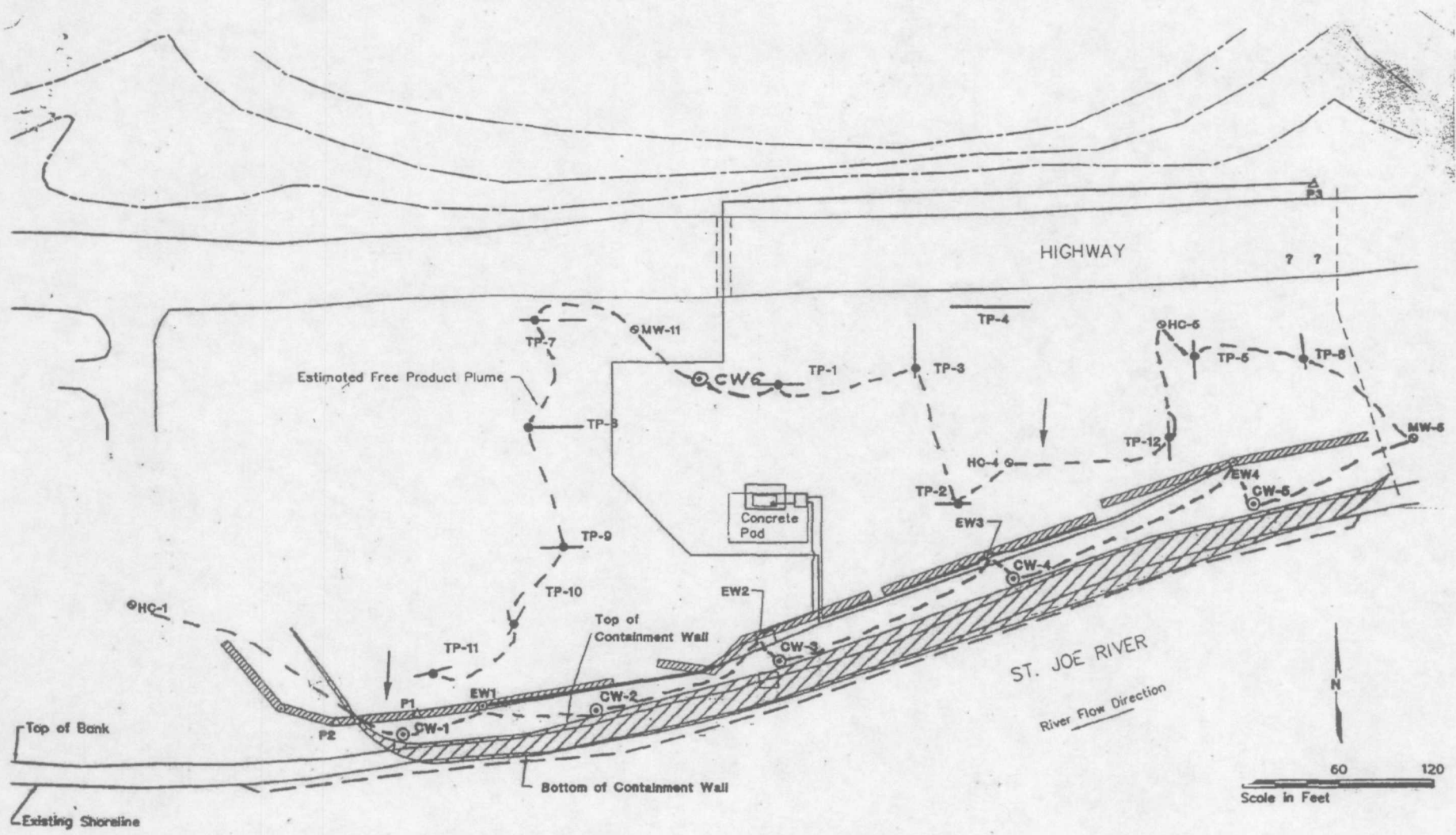
- TP-1 Test Pit Location and Number
- TP-1 Test Pit Monitoring Well Location and Number
- CW-1 Collection Well Location and Number
- ▨ Proposed Containment Wall - 7.50'

HART-CROWNSER
J-2296-07 7/00
Figure 4

Avery Well Monitoring

Date: 9/23/2004
 Measurements By: Norm Linton, Jim Green, Mark Karbaugh DER

Well	Depth to Oil	Depth to Water	Oil Thickness	Comments
HC-1	—	12.90	—	Clean Water, Red Rust Present
CW-1	—	14.06	—	To water light sheen Oil, Red Rust
EW-1	—	15.80	—	To water, white Worms
CW-2	—	14.83	—	To water, Red Rust Present
EW-2	13.04	15.07	0.03	Black Oil
CW-3	—	12.80	—	To Water, Red Rust present
EW-3	15.12	16.14	0.02	Black Oil
CW-4	—	11.67	—	To Water, slight Red Rust
EW-4	12.75	12.76	0.01	Black Oil
CW-5	—	12.24	—	To Water - clean
MW-5	—	10.52	—	Clean Water
TP-6	—	14.64	—	To water light sheen
TP-5	—	16.22	—	To water Red Rust present
HC-5	—	17.76	—	Clean Water
TP-12	—	14.76	—	To clean Water
HC-4	13.50	13.65	0.15	Black Oil
TP-2	15.40	Well Bottom 15.41	0.01	Black Oil
TP-3	—	15.85	—	To water micro White Worms
TP-1,4"	—	19.18	—	To water micro White Worms
TP-1,2"	—	19.42	—	To water micro white worms
CW-6	—	17.60	—	To water Red Rust white worms
MW-11	—	—	—	not tested
TP-7	—	17.00	—	Dry Well
TP-8	—	16.52	—	To water micro white worms / Red Rust
TP-9	—	17.33	—	To water, light sheen, white worms
TP-10	—	17.50	—	Dry Well
TP-11	—	17.46	—	To water, oily sludge at the bottom



Exploration Location and Number

- MW-1 Monitoring Well
- EW-1 Extraction Well
- △ P-1 Piezometer

- ← Approximate Groundwater Flow Direction
- ▨ Existing Extraction Trench
- - - Free Product Plume Area
- - - Retainer Block/Sand Bag Cofferdam

- TP-1 Test Pit Location and Number
- TP-1 Test Pit Monitoring Well Location and Number
- ⊙ CW-1 Collection Well Location and Number
- ▨ Proposed Containment Wall - 750'

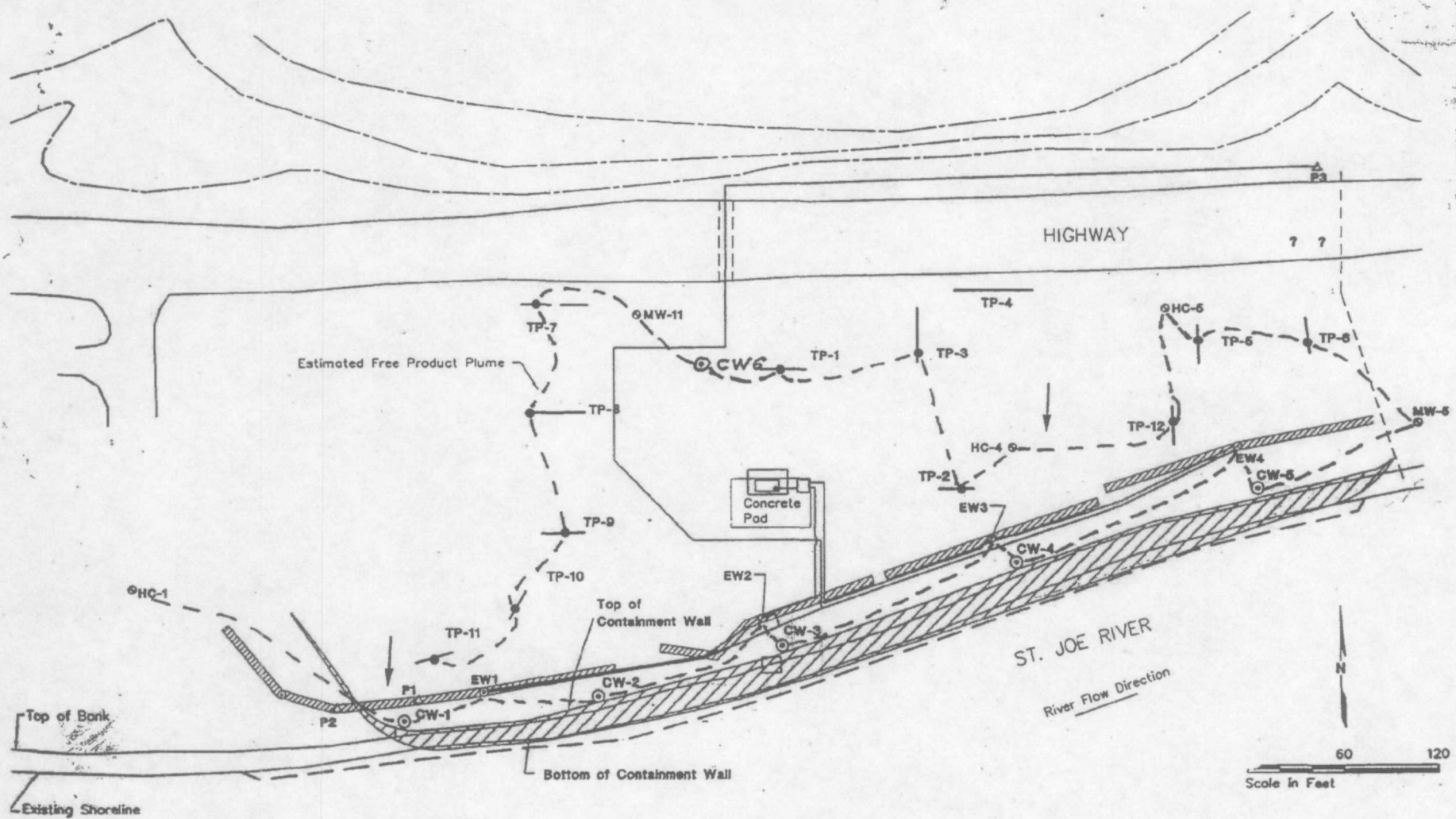
HARTBROWER
 J-2298-07 7/00
 Figure 4

Avery Well Monitoring

Date: 9/26/03

Measurements By: Norm Linton, Don Green

Well	Depth to Oil	Depth to Water	Oil Thickness	Comments
HC-1	-	13.41	-	To water Trace Red Rust
CW-1	-	14.59	-	To water, light sheen of oil
EW-1	-	16.32	-	To water, light sheen, white worms
CW-2	-	15.33	-	To water, Red Rust, light sheen
EW-2	15.59	15.62	0.03	Black Oil
CW-3	-	13.29	-	To water, Red Rust, light sheen
EW-3	15.85	15.91	0.06	Black Oil
CW-4	-	12.83	-	To water, light sheen
EW-4	13.95	13.97	0.02	Black Oil
CW-5	-	13.35	-	To water light sheen
MW-5	-	11.15	-	Clean Water
TP-6	-	15.00	-	Dry Well
TP-5	-	16.97	-	Rust in Water
HC-5	-	18.55	-	Clean Water
TP-12	-	14.92	-	To water micro white worms present
HC-4	14.40	14.45	0.05	Black Oil
TP-2	-	15.91	-	Well bottom
TP-3	-	16.10	-	Well bottom Trace of sludge
TP-1,4"	-	19.91	-	To Water micro white worms present
TP-1,2"	-	20.13	-	To water sheen of oil present
CW-6	-	18.31	-	To water light sheen
MW-11	-	not Tested	-	
TP-7	-	17.00	-	Dry Well
TP-8	-	16.77	-	To Water micro white worms present
TP-9	-	18.50	-	To water white micro worms no oil
TP-10	-	17.50	-	Dry Well
TP-11	-	17.71	-	To water - Trace of oil - micro white worms



Exploration Location and Number

- MW-4 Monitoring Well
- EW1 Extraction Well
- △ P1 Piezometer

- ← Approximate Groundwater Flow Direction
- ▨ Existing Extraction Trench
- - - Free Product Plume Area
- Retainer Block/Sand Bag Cofferdam

- TP-1 Test Pit Location and Number
- TP-1 Test Pit Monitoring Well Location and Number
- ◎ CW-1 Collection Well Location and Number
- ▨ Proposed Containment Wall - 7.50'

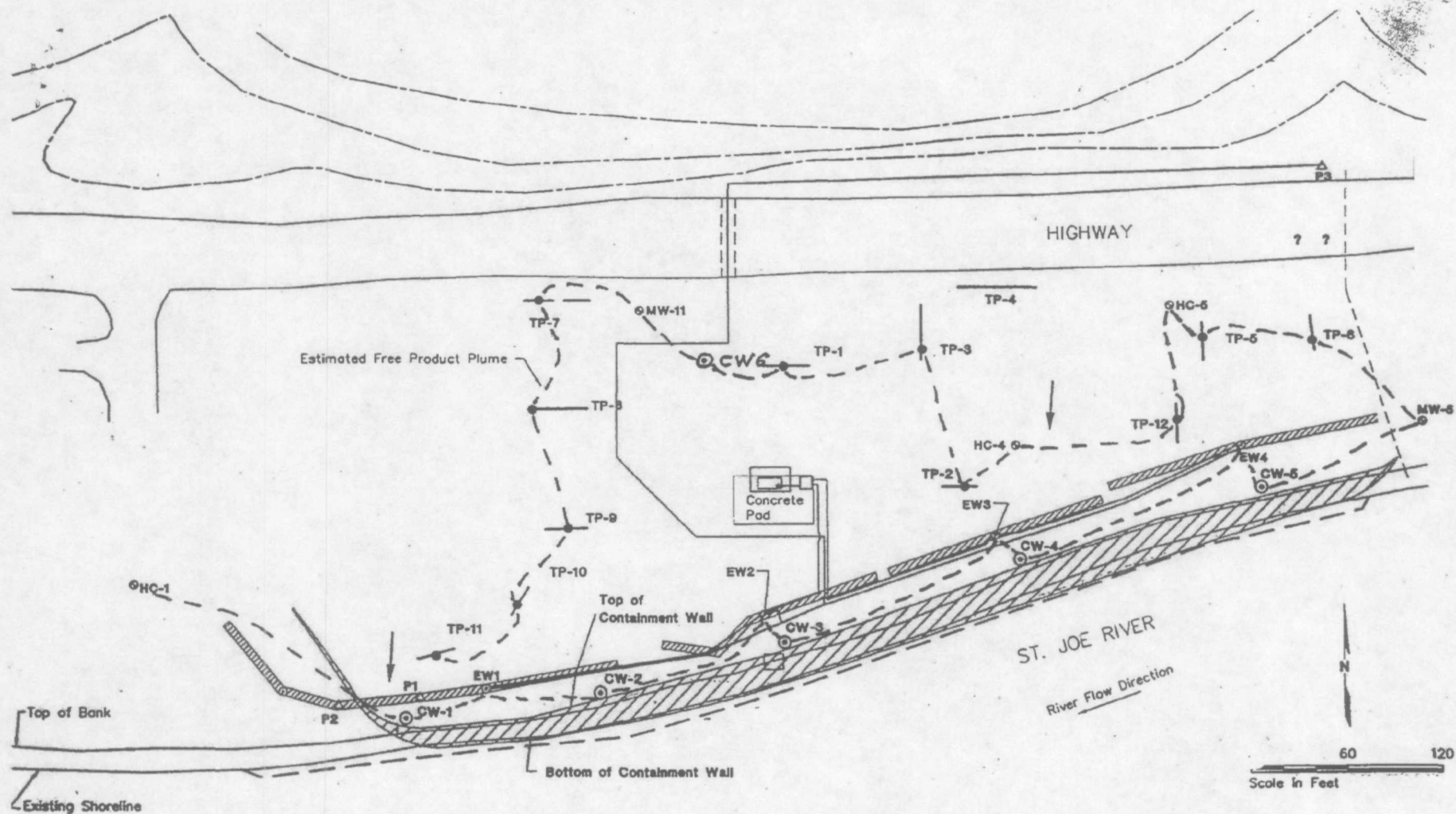
HARTGROWER
 J-2298-07 7400
 Figure 4

Avery Well Monitoring

Date: 10/4/2002

Measurements By: Norm Linton, Dan Green

Well	Depth to Oil	Depth to Water	Oil Thickness	Comments
HC-1	—	13.21	—	To water Trace Red Rust
CW-1	—	14.35	—	To water, light sheen
EW-1	—	15.97	—	To water, light sheen
CW-2	—	15.11	—	To water, Trace Red Rust, light sheen
EW-2	15.25	15.28	0.03	To Oil
CW-3	—	13.09	—	To water, light sheen; Red Rust
EW-3	15.43	15.50	0.07	To Oil
CW-4	—	12.31	—	To water light sheen
EW-4	13.29	13.31	0.02	To Oil
CW-5	—	12.76	—	To water, light sheen
MW-5	—	10.90	—	Clean Water
TP-6	—	15.00	—	Well Bottom - Dry
TP-5 2"	—	16.78	—	Rust in water
HC-5	—	18.18	—	Clean Water
TP-12	—	15.18	—	To water Trace of Oil
HC-4	13.51	13.60	0.09	Black Oil
TP-2	—	15.40	—	Well Bottom - oil sludge 1/4" thick
TP-3	—	16.10	—	Well Bottom Dry Trace of Oil
TP-1,4"	—	19.57	—	Light sheen - worms present
TP-1,2"	—	19.81	—	To water Sheen present
CW-6	—	18.03	—	To water light sheen white worms present
MW-11	—	—	—	not Tested
TP-7	—	17.00	—	Well Bottom Dry
TP-8	—	16.82	—	Well Bottom Dry
TP-9	—	18.30	—	To water - Trace of oil - white worms
TP-10	—	17.50	—	Well Bottom Dry
TP-11	—	17.52	—	To water, Trace of oil - white worms



Exploration Location and Number

- MW-4 Monitoring Well
- EW-1 Extraction Well
- △ P1 Piezometer

- ← Approximate Groundwater Flow Direction
- ▨ Existing Extraction Trench
- - - Free Product Plume Area
- - - Retainer Block/Sand Bag Cofferdam

- TP-1 Test Pit Location and Number
- TP-1 Test Pit Monitoring Well Location and Number
- ◎ CW-1 Collection Well Location and Number
- ▨ Proposed Containment Wall - 750'

Scale in Feet
60 120

HART-CROWSER
J-229B-02 7/00
Figure 4

cc: Larry Bentsik
: Xneg Beck

DRAFT—Issued for Client Review

**FAILURE ANALYSIS AND PRELIMINARY CORRECTIVE
ACTION WORK PLAN**

**AVERY LANDING SITE
AVERY, IDAHO**

**Submitted by:
Farallon Consulting, L.L.C.
320 3rd Avenue Northeast
Issaquah, Washington 98027
Farallon PN: 496-001**

RECEIVED

MAR 17 2006

DEQ-Coeur d'Alene
Regional Office

**For:
Potlatch Forest Products Corporation
1100 Railroad Avenue
P.O. Box 386
St. Maries, Idaho 83861**

March 17, 2006

Prepared by:

**Carla E. Brock, P.G. (pending)
Project Geologist**

**Terry Montoya, P.E.
Senior Project Engineer**

Reviewed by:

**Peter Jewett
Principal Engineering Geologist**

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1-1
1.1	PURPOSE.....	1-1
2.0	BACKGROUND	2-1
3.0	PRELIMINARY EVALUATION OF FAILURE ALTERNATIVES	3-1
3.1	CONTAINMENT WALL TEAR.....	3-1
3.2	CONTAINMENT WALL BREACH.....	3-1
3.2.1	Horizontal Breach.....	3-1
3.2.2	Vertical Breach.....	3-2
4.0	ASSESSMENT OF FAILURE ALTERNATIVES	4-1
5.0	PRELIMINARY EVALUATION OF REMEDIAL ALTERNATIVES	5-1
5.1	CONTAINMENT WALL TEAR.....	5-1
5.2	HORIZONTAL BREACH.....	5-1
5.3	VERTICAL BREACH.....	5-1
6.0	INTERIM ACTION PLAN.....	6-1
7.0	REMEDIAL ALTERNATIVE IMPLEMENTATION PLAN	7-1
8.0	LIMITATIONS.....	ERROR! BOOKMARK NOT DEFINED.

FIGURES

- Figure 1 Site Vicinity Map
- Figure 2 Aerial Photograph 1998
- Figure 3 Site Plan

TABLES

- Table 1 Groundwater and River Elevations

1.0 INTRODUCTION

Farallon Consulting, L.L.C. (Farallon) has prepared this Failure Analysis and Preliminary Corrective Action Work Plan (Work Plan) on behalf of the Potlatch Forest Products Corporation to address the Idaho Department of Environmental Quality (DEQ) requirements regarding the discharge of light non-aqueous phase liquid (LNAPL) as oil from the Avery Landing site (herein referred to as the Site) (Figure 1) to the St. Joe River. The Site is located along railroad tracks and was the former location of a railroad roundhouse and maintenance yard. The LNAPL is attributed to releases associated with the former maintenance operations at the Site.

A remedial action conducted at the Site in ~~2001~~²⁰⁰⁰ included installation of a containment wall and collection wells to stop the migration of LNAPL from the Site to the St. Joe River. Annual monitoring events have been conducted at the Site since ~~2001~~²⁰⁰⁰ to document groundwater conditions and LNAPL thicknesses and confirm that the containment wall is working as intended. During the annual monitoring event on September 25, 2005, LNAPL was observed seeping from the river bank and a sheen on the surface of the river was near collection well CW-3 (Figure 2). DEQ was notified of these observations in a letter dated October 3, 2005 regarding *Avery Landing Monitoring - 2005*, prepared by Potlatch Corporation (Potlatch 2005). In accordance with the monitoring requirements, appropriate remedial actions are required by DEQ to address the release of LNAPL to the river.

1.1 PURPOSE

The purpose of the Work Plan is to provide a scope of work to determine the migration pathway of the LNAPL from the Site to the river, provide alternatives of interim actions that may be necessary, and present an evaluation of preliminary alternatives to prevent future releases of LNAPL to the river.

2.0 BACKGROUND

The Site is located in Shoshone County, Idaho in the northeast corner of Section 15 and the northwest corner of Section 16 of Township 45 North, Range 5 East. The Site is approximately four acres and is located approximately 0.5-mile west of Avery, Idaho along the St. Joe River at approximately River Mile 64.5. According to the United States Geological Survey (USGS) topographic map for the Site vicinity, the elevation of the Site is approximately 2,480 feet above mean sea level (msl). The Site is currently a vacant parcel bordered to the north by Highway 50, to the south by the St. Joe River and to the east and west by private residences.

The Site was used by the Milwaukee Railroad, that is no longer a viable entity, as its log loading station and round house maintenance facility. It is suspected that the contamination at the Site is associated with the railroad activities. The petroleum impacted area was estimated by Hart Crowser at 92,000 square feet ranging in depth from the 3 to 18 feet below grade surface (Hart Crowser 2000).

Hart Crowser Inc. operated an LNAPL from 1994 to 2000 that consisted of four large recovery trenches with LNAPL skimming equipment in each trench. Water was extracted from the trenches and pumped across Highway 50 to create a "trough" of area that would contain the LNAPL that migrated toward the St. Joe River. The LNAPL skimming equipment collected the LNAPL and pumped it to an onsite storage tank. A total of ~~775~~ ¹²⁹⁰ gallons of LNAPL was removed by the system.

The LNAPL removal system did not fully mitigate the migration of LNAPL into the St. Joe River; therefore, Potlatch decided to install a containment wall along the river bank. Approximately 650 linear feet of the St. Joe River bank was excavated and a PVC liner was installed from the top of the bank to below the surface water level in the summer of 2000. Figure 3 depicts the installation area.

Potlatch presented the remediation and project schedule in a letter dated December 21, 2001 (Potlatch 2001) that included annual LNAPL monitoring during August or September 2000. The monitoring plan included the requirement that measurable oil of 0.05-feet or greater would trigger active LNAPL recovery from the collection wells. The monitoring scope of work included monitoring of visible evidence of the surface water in the river and the river bank for any sign of oil sheen on the water surface or LNAPL in the water.

The annual monitoring and sampling for 2005 was conducted on September 29. Groundwater level measurements were measured to be lower than previous measurements and the river level was noted to be low. The thickness of LNAPL measured in monitoring wells on September 29, 2005 ranged from 0.01 feet to 0.04 feet (Potlatch 2005) (Table 1). Visual inspection of the river bank identified discharge of LNAPL and water with an oily sheen to the river channel.

3.0 PRELIMINARY EVALUATION OF FAILURE ALTERNATIVES

The release of LNAPL as oil observed along the river bank on September 29, 2005 is likely due to some type of failure of the containment wall. The potential failure mechanisms include a tear in the liner or a breach of the containment wall. A preliminary evaluation of each of these potential failure mechanisms is presented in the following sections.

3.1 CONTAINMENT WALL TEAR

The containment wall is composed of 30-mil PVC alloy liner that is protected by geotextile fabric and covered with clean fill, crushed rock, and rip rap along the river bank. The observation of LNAPL as oil seeping out from the river bank near collection well CW-3 in September 2005 could be the result of a tear in the liner. A tear in the liner would provide a migration pathway for oil to the river bank at certain groundwater elevations.

3.2 CONTAINMENT WALL BREACH

The observation of LNAPL as oil seeping from the river bank near collection well CW-3 in September 2005 could be the results of a breach in the containment wall by migration of oil either around the east and/or west ends of the containment wall, beneath the containment wall, or over the top of the containment wall. Since the top of the containment wall extends almost to the top of the bank and the depth to groundwater and LNAPL is generally between 12 to 18 feet below the top of the well casings at the top of the bank, it is unlikely that oil is breaching the top of the containment wall. A preliminary evaluation of the failure mechanism of a horizontal breach (migration of oil either around the end(s) of the containment wall), or of a vertical breach (migration of oil under the containment wall) is provided in the following sections.

3.2.1 Horizontal Breach

The monitoring plan described in the Corrective Action Plan (Hart Crowser 2000) provided guidelines for monitoring and removal of LNAPL in the collection wells to prevent migration of LNAPL as oil around the east and west ends of the containment wall. Calculations conducted prior to installation of the containment wall estimated the volume of LNAPL at the containment wall that would result in a horizontal breach. The calculations were based on an assumed 10-foot smear zone and the distance from the ends of the containment wall to collection wells CW-1 and CW-5 (Figure 3). The results of the calculations were used to develop the long term monitoring plan. In order to prevent a breach of the containment wall, it was determined that LNAPL exceeding 2-feet in thickness in any of the collection wells would trigger active recovery of the LNAPL from the collection well. Since monitoring of the containment wall began in 2000, LNAPL has not been identified at measurable thicknesses in any of the collection wells.

However, the changes that the containment wall has had on the groundwater flow regime at the Site have not been evaluated. It is possible that new groundwater flow paths have developed since installation of the containment wall and that the LNAPL as oil is migrating on groundwater around the containment wall.

3.2.2 Vertical Breach

The containment wall was installed with the bottom of the liner set approximately 2 feet below the low water mark of the river in the Summer of 2000. The field notes documenting conditions at the Site on September 29, 2005 indicate that the water level of the river was very low. The USGS operates and maintains a river gaging station on the St. Joe River near River Mile 43 at the town of Calder, Idaho. The river at Calder, Idaho is located at an elevation of approximately 2,180 feet msl and the gage datum is 2,171.76 feet msl (relative to the National Geodetic Vertical Datum 29 [NGVD29]). The stream gauge measurements on September 15 2005 indicated that the river level was at 5.06 feet above the gage datum, or 2176.82 feet above sea level. In 2000, when the containment wall was installed, the river level was measured at 4.65 feet above the gage datum at Calder, an even lower river level than in 2005. Table 1 presents the St. Joe River data at the Calder gauge from 1994 until 2005.

Measured depths to groundwater during the September 2005 monitoring event indicate that the depth to groundwater at the Site ranged from 11.23 feet to 23.06 feet below the top of the well casings, with an average depth to groundwater from the 26 monitoring points of 16 feet below the top of the well casings. The lowest recorded depth to groundwater in monitoring well EW-2, monitoring well located closest to the observed LNAPL seepage, for the 10 year period that it has been monitored, the lowest recorded reading was 79.65 in 2005. Table 1 presents the groundwater elevation at monitoring well EW-2 from 1994 to 2005.

4.0 ASSESSMENT OF FAILURE ALTERNATIVES

There is insufficient data to determine the failure mechanism for the containment wall. Additional evaluation during low water will be necessary to evaluate the failure mechanism in order to develop a remedial action. The following scope of work will evaluate the cause of the failure of the containment wall. The assessment will include the following elements:

- Survey the elevations of the collection wells, the top of the containment wall, the top and toe of the river bank, and the river height in with the surveyed monitoring well network at the Site;
- Measure groundwater and LNAPL levels in all of the wells at the Site;
- Visually inspect and photograph document the condition of the river bank and containment wall;
- Model the groundwater flow between the Site and the river; and
- Evaluate the fate and transport mechanisms of the LNAPL.

An elevation survey will be conducted of all Site features, including monitoring wells, extraction wells, collection wells, the top of the containment wall, the top of the river bank, the estimated base of the containment wall and the river level. All of these elements will be incorporated into hydrogeologic models to determine the migration pathway for LNAPL as oil to reach the river bank. Groundwater and LNAPL levels will be measured monthly for four months during the summer to determine the groundwater-surface water interaction with the containment wall during low water season. The USGS measures and records river levels monthly. The USGS real-time data will be monitored and compared to groundwater levels at the Site.

The groundwater flow regime at the Site will be evaluated with the new data to determine if a horizontal or vertical breach of the containment wall appears likely. If it does not appear that the release of LNAPL as oil to the river is a result of a breach of the containment wall, it will be assumed that a tear in the wall is the cause of the release.

5.0 PRELIMINARY EVALUATION OF REMEDIAL ALTERNATIVES

Based on the results of the assessment outlined in Section 4.0, a detailed evaluation of remedial alternatives will be conducted to address the apparent cause of containment wall failure. These alternatives will include permanent alternatives, such as repairs to the liner, and institutional controls; or temporary alternatives that may be implemented as needed to impede migration of LNAPL to the river. A preliminary evaluation of potential remedial alternatives that may be technically feasible for each potential failure mechanism is provided in the following sections.

5.1 CONTAINMENT WALL TEAR

A tear in the containment wall can only be confirmed and repaired by removing the fill, rock, and rip rap overlying the PVC liner and geotextile fabric. If the failure assessment does not indicate that a breach of the containment wall is the cause of the release of LNAPL as oil to the river, the PVC liner will be uncovered and inspected near the location of collection well CW-3, where the oil seepage was observed. The condition of the liner will be photographed and documented. If a tear is confirmed, the containment wall will be repaired.

5.2 HORIZONTAL BREACH

A horizontal breach in the containment wall will require an institutional control to prevent migration of groundwater and LNAPL around one, or both, ends of the wall. Depending on the results of the groundwater flow modeling and fate and transport evaluation of LNAPL, the remedial alternatives may include pumping and/or injection of groundwater from one or more specific locations to contain the LNAPL to the Site, or other measures.

5.3 VERTICAL BREACH

A vertical breach in the containment wall may require implementation of controls to reduce migration of oil beneath the wall when groundwater levels and the river water level are lowest. The river water level and groundwater level at the Site will be monitored and controls will be implemented when those levels drop below a threshold, determined by the evaluation, that could result in the release of oil to the river. The controls may consist of deploying booms and ~~absorbent pads, or other measures, to collect oil before it reaches the water of the river.~~

6.0 INTERIM ACTION PLAN

In order to minimize the impact of LNAPL oil migrating past the containment wall, oil absorbent booms will be implemented at all times the St. Joe River is below high water level. Farallon estimates the booms may be required from late April until December until the LNAPL migration has been mitigated. Inspections and documentation of the inspections of the booms will be required every two weeks for the following:

- Boom Integrity – Boom buoyancy is adequate, minimal sunlight degradation has occurred and the boom is still anchored to the river wall properly;
- Boom Oil Saturation – Booms do not show excess staining and no oil is present behind the booms;
- Boom Staining Documentation – Staining of the booms shall be documented by both a narrative and digital photography; and
- Boom Replacement – Replacement booms will be stored on site and be replaced during the inspection site visit if needed.

Used booms will be temporarily stored on Site for final disposal off site at the end of each season. An operation and monitoring plan for the interim action will be prepared by Potlatch and submitted to DEQ to guide the interim action.

7.0 REMEDIAL ALTERNATIVE IMPLEMENTATION PLAN

Following determination of the failure mechanism, Farallon will evaluate feasible remedial alternatives and prepare a Remedial Action Work Plan that will provide details for implementation of the selected remedial alternative. The Work Plan will provide a detailed description of the schedule for implementation of the selected remedial alternative. Farallon anticipates the evaluation study will be completed in November 2006, after all of the low water data have been collected and analyzed. If the selected alternative involves in water work, Farallon estimates the alternative implementation will occur during the summer of 2007 during the low water season to allow for the necessary permits.

8.0 REFERENCES

Hart Crowser. 2000. *Corrective Action Plan, Avery Landing Site*. Prepared by Mr. Terry Montoya and Mr. Mathew F. Schultz for Mr. Norm Linton. Area Manager, Potlatch Corporation. July 27.

Potlatch Corporation. 2001. Letter Regarding Avery Landing Remediation and Project Schedule. From Mr. Norm Linton, Potlatch Corporation Area Manager. To Mr. Kreg Beck. State of Idaho, Division of Environmental Quality. December 21.

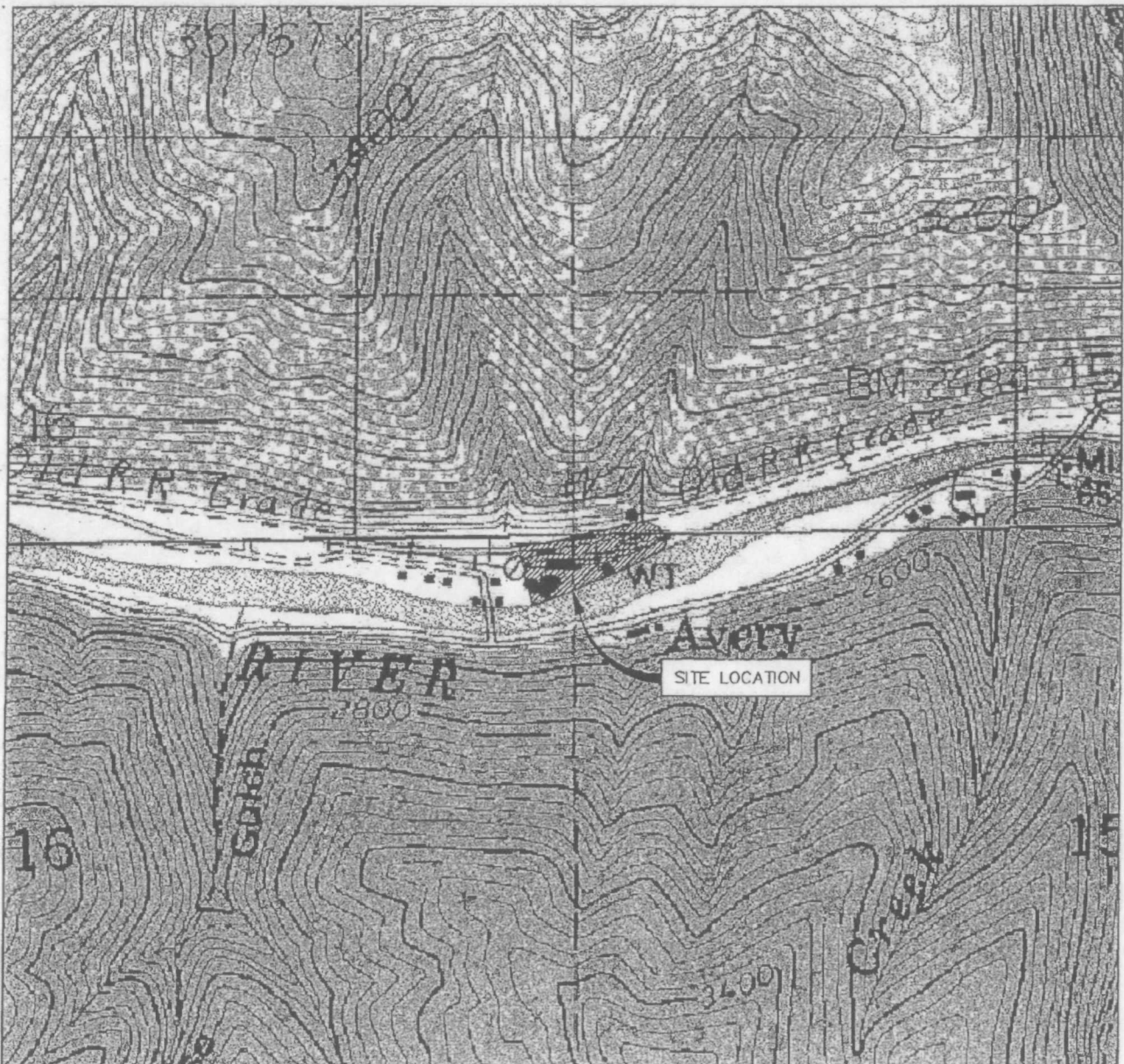
Potlatch Corporation. 2005. Letter Regarding Avery Landing Monitoring – 2005. From Mr. Norm Linton, Potlatch Corporation Area Manager. To Mr. Mar Kalbaugh. State of Idaho, Division of Environmental Quality. October 3.

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FIGURES

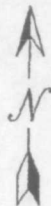
**Failure Analysis and Preliminary Corrective Action Work Plan
Avery Landing Site
Avery, Idaho**

Farallon PN: 496-001



SOURCE: TERRACERVER-USA
NOT TO SCALE

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FARALLON CONSULTING
320 3rd Ave. NE
Issaquah, WA 98027

FIGURE 1

SITE VICINITY MAP
AVERY LANDING
AVERY, IDAHO

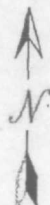
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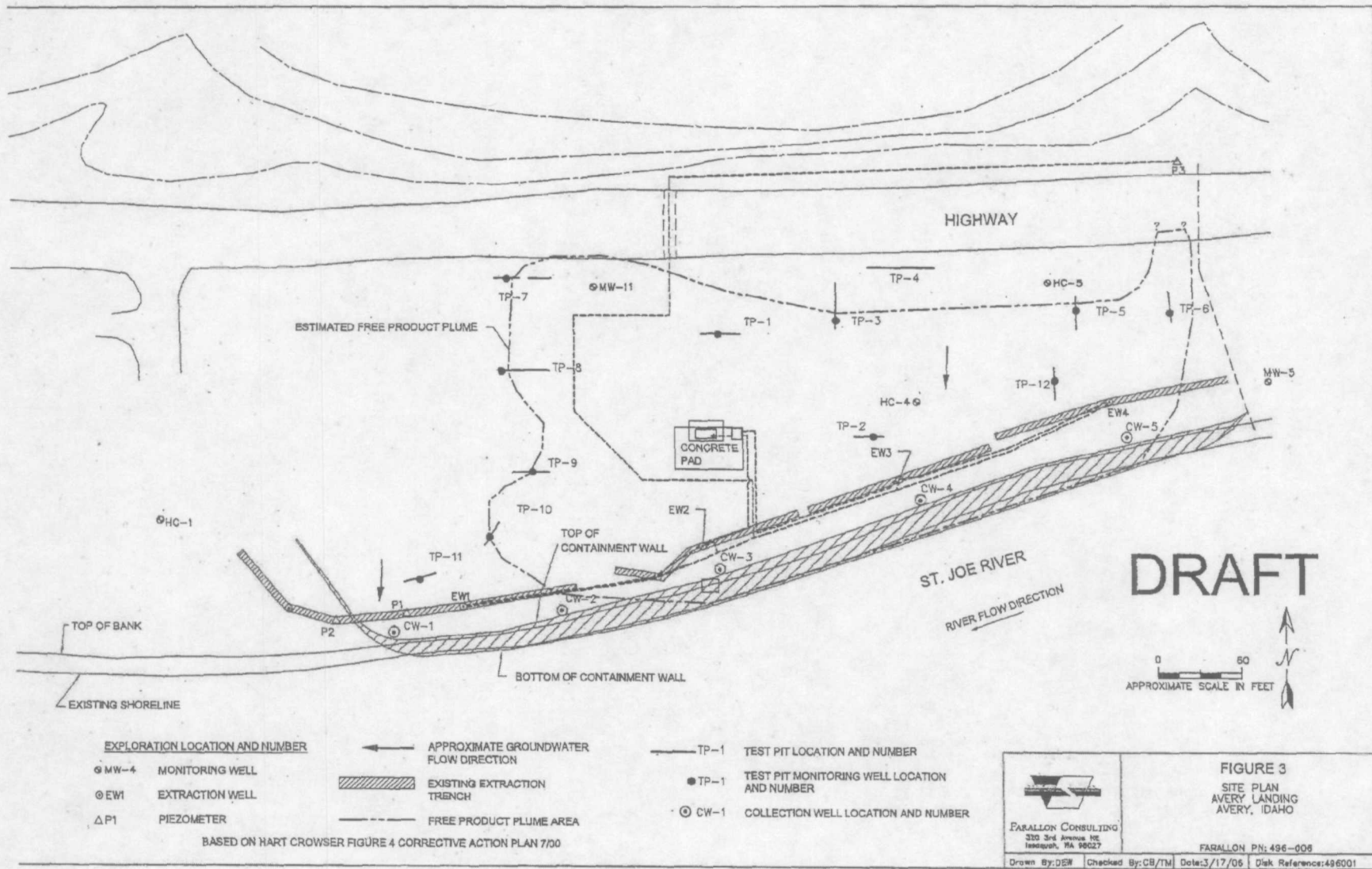
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320 3rd Ave. NE
Issaquah, WA 98027

FIGURE 2

SITE AERIAL PHOTOGRAPH--1998
AVERY LANDING
AVERY, IDAHO

FARALLON PN: 495-001

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TABLE

**Failure Analysis and Preliminary Corrective Action Work Plan
Avery Landing Site
Avery, Idaho**

Farallon PN: 496-001

Table 1
Groundwater and River Elevations
Avery Landing
Avery, Idaho
Parallon PN: 496-001

Monitoring Location	TOC Elevation ¹	Date	Depth to LNAPL	Depth to Groundwater	LNAPL Thickness	Groundwater Elevation ¹	Date	River Elevation ²
EW-2	95.24	10/27/1994	NM	10.37	0	84.87	10/19/1994	2176.34
		6/30/1995	10.57	10.89	0.32	84.35	7/13/1995	2177.76
		9/21/1995	13.9	13.92	0.02	81.32	8/31/1995	2176.81
		7/11/1996	11.03	11.66	0.63	83.58	NA	NA
		9/11/1996	NM	14	0	81.24	10/23/1996	2177.34
		11/3/1996	NM	12.27	0	82.97	NA	NA
		7/17/1997	8.99	9.09	0.1	86.15	7/1/1997	2180.55
		10/9/1997	NM	15.44	0	79.8	10/16/1997	2177.5
		6/25/1998	9.19	9.64	0.45	85.6	6/2/1998	2180.58
		8/12/1998	NA	9.99	NA	NA	7/28/1998	2177.63
		10/22/1998	NM	10.94	0	84.3	10/7/1998	2176.99
		3/18/1999	10.17	10.27	0.1	84.97	3/29/1999	2179.88
		6/22/1999	11.3	11.31	0.01	83.93	7/7/1999	2179.65
		9/16/1999	15.32	15.35	0.03	79.89	9/9/1999	2177.16
		12/2/1999	9.91	10.1	0.19	85.14	12/8/1999	2177.91
		3/30/2000	9.5	10.29	0.79	84.95	3/15/2000	2178.55
		6/14/2000	8.89	9.39	0.5	85.85	5/25/2000	2181.37
		11/8/2000	NM	15.25	0	79.99	11/29/2000	2176.77
		12/4/2000	14.19	NA	NA	NA	NA	NA
		1/16/2001	14.6	NA	NA	NA	1/9/2001	2176.45
		2/15/2001	14.34	14.36	0.02	80.88	2/27/2001	2176.49
		3/16/2001	14.75	14.78	0.03	80.46	NA	NA
		4/18/2001	14.6	NA	NA	NA	4/11/2001	2177.6
		5/15/2001	11.53	11.54	0.01	83.7	5/2/2001	2180.8
		6/20/2001	14.1	NA	NA	NA	6/26/2001	2177.83
		7/21/2001	14.95	15	0.05	80.24	7/18/2001	2177.16
		8/21/2001	15.34	15.38	0.04	79.86	NA	NA
		9/28/2001	15.62	15.67	0.05	79.57	9/18/2001	2176.33
		10/31/2001	14.62	14.65	0.03	80.59	10/25/2001	2176.68
		10/4/2002	15.25	15.28	0.03	79.96	10/1/2002	2177.07
		9/26/2003	15.59	15.62	0.03	79.62	9/15/2003	2176.81
		9/24/2004	15.04	15.07	0.03	80.17	9/21/2004	2177.33
		9/29/2005	15.58	15.59	0.01	79.65	9/15/2005	2176.82

¹Elevations relative to arbitrary Site datum

²River elevation as measured by USGS at gaging station 12414500 at Calder, Idaho, above mean sea level NGVD29.

LNAPL = light non-aqueous phase liquid

NA = Data not available

NGVD29 = National Geodetic Vertical Datum 29

NM = No measurable thickness of LNAPL

TOC = top of casing